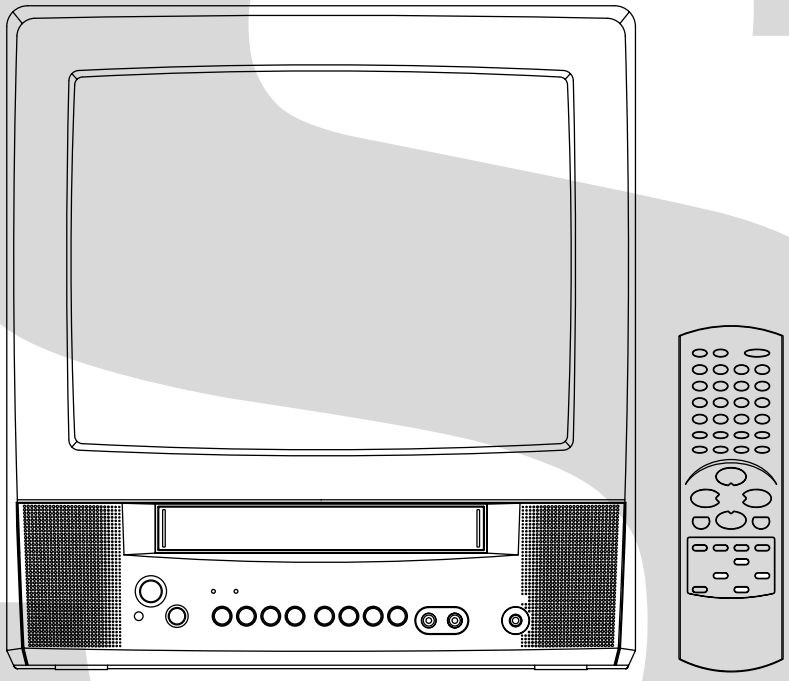
TOSHIBA

FILE NO. 140-200330

SERVICE MANUAL

COLOR TELEVISION/ VIDEO CASSETTE RECORDER

MV13N2W



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SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal

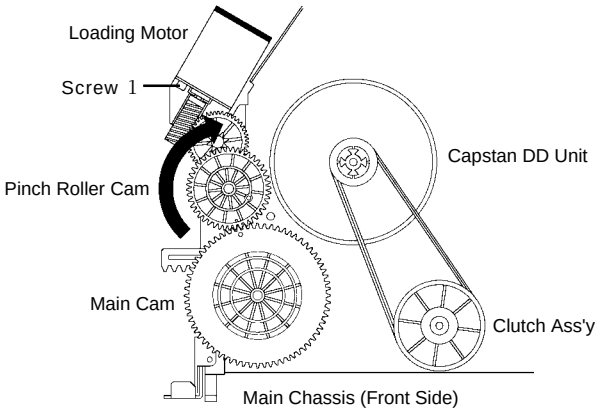
HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the VCR block from the main unit.
   (Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)
2. Remove the screw 1 of the Deck Chassis and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape.
4. Rotate the Clutch Ass'y either of the directions to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.



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GENERAL SPECIFICATIONS

G-1	**TV System**	CRT		CRT Size / Visual Size	13 inch / 335.4mmV
				CRT Type	Normal
				Deflection	90 degree
				Magnetic Field BV/BH	+0.45G / 0.18G
		Color System			NTSC
		Speaker			1Speaker
				Position	Front
				Size	1.5 x 2.5 Inch
				Impedance	8 ohm
		Sound Output		MAX	1.5 W
				10%(Typical)	1.0 W
G-2	**VCR System**	System			VHS Player / Recorder
		Video System			NTSC
		Hi-Fi STEREO			No
		NTSC PB			-
		Deck		DECK	OVD-7
				Loading System	Front
				Motor	3
		Heads	Video Head		2 Head
			FM Audio Head		No
			Audio /Control		Mono/Yes
			Erase(Full Track Erase)		Yes
		Tape Speed	Rec	PAL	-
				NTSC	SP/SLP
			Play	PAL	-
				NTSC	SP/SLP
		Fast Forward / Rewind Time (Approx.) at 25oC			FF:4'50"/REW:2'30"
				with Cassette	T-120
		Forward/Reverse Picture Search		NTSC or PAL-M	SP/SLP=3x,5x/9x,15x
				PAL or SECAM	-
		Frame Advance			-
		Slow Speed			-
G-3	**Tuning System**	Broadcasting System			US System M
		Tuner and Receive CH		System	1Tuner
				Destination	US(w/CATV)
				Tuning System	F-Synth
				Input Impedance	VHF/UHF 75 ohm
				CH Coverage	2~69, 4A,A-5~A-1, A~I, J~W,W+1~W+84
		Intermediate Frequency		Picture(FP)	45.75MHz
				Sound(FS)	41.25MHz
				FP-FS	4.5MHz
		Preset CH			No
		Stereo/Dual TV Sound			No
		Tuner Sound Muting			Yes
G-4	**Signal**	Video Signal		Input Level	1 V p-p/75 ohm
				Output Level	-
				S/N Ratio (Weighted)	50dB
				Horizontal Resolution at SP Mode	220Lines
		Audio Signal		Input Level	-8dBm/50k ohm
				Output Level	-
				S/N Ratio at SP (Weighted)	38dB
				Harmonic Distortion at SP (1KHz) Typical	1.5 %
				Frequency Response at SP	100Hz - 10kHz
				at LP	-
				at SLP	100Hz - 4kHz
		Hi-Fi Audio Signal		Dynamic Range : More than	-
				Frequency Response	-
				Wow And Flutter : Less than	-
				Channel Separation : More than	-
				Harmonic Distortion : Less than	-
G-5	**Power**	Power Source		AC	120V 60Hz
				DC	-
		Power Consumption		at AC	65 W at 120V 60Hz
				at DC	-
				Stand by (at AC)	5 W at 120V 60 Hz
				Per Year	-
		Protector		Power Fuse	Yes
				Dew Sensor	No

GENERAL SPECIFICATIONS

G-6	**Regulation**			Safety	UL	
				Radiation	FCC	
				X-Radiation	DHHS	
G-7	**Temperature**			Operation	+5oC ~ +40oC	
				Storage	-20oC ~ +60oC	
G-8	**Operating Humidity**				Less than 80% RH	
G-9	**On Screen**	Menu			Yes	
	Display		Menu	Type	Character	
			Timer Rec Set		Yes	
			Channel Setup		Yes	
				TV/CATV	Yes	
				Auto CH Memory	Yes	
				Add/ Delete	Yes	
				Guide CH Set		No
			TV Setup		Yes	
				V-chip Set	Yes	
				On/Off Timer Set	Yes	
				Picture	Yes	
				Audio		No
				Sap On/Off		No
			Auto Repeat On/Off		Yes	
			System Setup		Yes	
				Clock Set	Yes	
				Language	Yes	
				Auto Clock On/Off	Yes	
				Standard Time	Yes	
				Daylight Saving Time	Yes	
			Commercial Advance			No
				Marking On/Off		No
				Blueback On/Off		No
				Playback Auto/Manual		No
				Unmarked Tape		No
			Movie Advance			No
				Go To Movie		No
				Go To Preview		No
		G-CODE(or SHOWVIEW or PLUSCODE)No. Entry				No
		Clock			Yes	
		CH/AV			Yes	
		Tape Counter(Linear Counter)			Yes	
		Tape Speed			Yes	
		Sleep Time			Yes	
		Stereo/Audio Output				No
				Bilingual		No
				SAP		No
		Control	Volume		Yes	
		Level	Bright / Contrast / Sharpness / Color		Yes	
			Tint		Yes	
			Bass/Treble/Balance			No
			Manual Tracking		Yes	
		Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In (Symbol Mark)			Yes	
		Auto Tracking/Manual Tracking			Yes	
		Caption / Text			Yes	
		Index				No
		Mute			Yes	
		Hi-Fi				No
		Repeat			Yes	
		Zero Return			Yes	
		DEW				No
G-10	**OSD Language**				English French Spanish	
G-11	**Clock,Timer**	Calendar			1990/1/1 ~ 2081/12/31	
	and Timer	Timer Events			8 prog/ 1 month	
	Back-up	One Touch Recording Max Time			6 Hours	
		OTPB Valid Time			No	
		Sleep Timer		Max Time	120	min.
				Step	10	min.
		On/Off Timer		Program(On Timer / Off Timer)	1	prog.
		Auto Shut Off		No Signal	15	min.
				No Operation	-	
		Timer Back-up (at Power Off Mode)			5	sec.

GENERAL SPECIFICATIONS

G-12	**Remote Control**	Unit		RC-GC
		Glow in Dark Remocon		Yes
		Format		NEC
		Custom Code		40-BFh , 44-BBh
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		42 Keys
		Keys	Power	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			CH Up	Yes
			CH Down	Yes
			Volume Up	Yes
			Volume Down	Yes
			Input Select	Yes
			Play	Yes
			F.Fwd	Yes
			Rew	Yes
			Pause/Still	Yes
			Stop	Yes
			Rec/OTR	Yes (2Keys)
			Eject	Yes
			Counter Reset	Yes
			Speed	Yes
			Timer Rec	Yes (2Keys)
			TV Monitor	No
			Quick View	Yes
			Program	Yes
			Slow	No
			Auto Tracking	Yes
			Set/Tracking+	Yes
			Set/Tracking -	Yes
			Menu	Yes
			Enter	Yes
			Cancel	Yes
			Call	Yes
			TV/Caption/Text	Yes
			Sleep Timer	Yes
			Mute	Yes
			Zero Return	Yes
			CM Skip	Yes
			Audio Select	No

GENERAL SPECIFICATIONS

G-13	**Features**	Auto Head Cleaning		No
		Auto Tracking		Yes
		HQ (VHS Standard High Quality)		Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes
		VIDEO PLUS+(SHOWVIEW,G-CODE)		No
		Auto Clock		Yes
		Forward / Reverse Picture Search		Yes
		One Touch Playback		No
		Auto CH Memory		Yes
		Closed Caption		Yes
		TV Auto Shut off Function		Yes
		End Call		No
		Index Search		No
		SQPB		No
		CATV		Yes
		CM Skip(30sec x 6 Times)		Yes
		Comb Filter		No
		TV Monitor		No
		Program Extend		No
		Choke Coil		No
		Energy Star		Yes
		Dirty Head		No
		V-chip USA V-chip		Yes
		CANADA V-chip		No
		CM Advance		No
		Movie Advance		No
		Zero Return		Yes
		Power On Memory		No
		Protect of FBT Leak Circuit		Yes
G-14	**Accessories**	Owner's Manual	Language	English
			w/Guarantee Card	Yes
		Remote Control Unit		Yes
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
			OEM Brand	No
		Rod Antenna		No
			Poles	-
			Terminal	-
		Loop Antenna		No
			Terminal	-
		U/V Mixer		No
		300 ohm to 75 ohm Antenna Adapter		Yes
		Antenna Change Plug		No
		DC Car Cord (Center+)		No
		AC Plug Adapter		No
		AC Cord		No
		AV Cord (2Pin-1Pin)		No
		Guarantee Card		No
		Registration Card		Yes
		ESP Card		Yes
		Warning Sheet		No
		Dew/AHC Caution Sheet		No
		Quick Set-up Sheet		No
		Circuit Diagram		No
		Service Facility List		No
		Important Safeguard		No
		Sheet Information (Return)		Yes[From '03 JUN O/R]

GENERAL SPECIFICATIONS

G-15	**Interface**	Switch		Power	Yes
				Play	Yes
				Pause/Still	No
				One Touch Playback	No
				Channel Up	Yes
				Channel Down	Yes
				F.FWD/Cue	Yes
				Eject/Stop	Yes
				Main Power SW	No
				Volume Up	Yes
				Volume Down	Yes
				Rew/Rev	Yes
				Rec/OTR	Yes
				Input Select	No
		Indicator		Power	No
				Rec/OTR	Yes (Red)
				T-Rec	Yes (Red)
				On Timer	No
				CS	No
		Key Light up		Rec/OTR	No
				One Touch Playback	No
				Play	No
		Terminals	Front	Video Input	RCA x 1
				Audio Input	RCA x 1
				Other Terminal	Head Phone(Stereo & Mono, 3.5mm)
			Rear	Video Input	No
				Audio Input	No
				Video Output	No
				Audio Output	No
				Euro Scart	No
				Diversity	No
				Ext Speaker	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	F Type
				AC Inlet	No
G-16	**Set Size**			Approx. W x D x H (mm)	362 x 365 x 382
G-17	**Weight**			Net (Approx.)	11.0 kg(24.3 lbs)
				Gross (Approx.)	12.5 kg(27.6 lbs)
G-18	**Carton**		Master Carton		No
				Content	-
				Material	-
				Dimensions W x D x H(mm)	-
				Description of Origin	-
			Gift Box		Yes
				Material	Double/White
				Dimensions W x D x H(mm)	423 x 447 x 443
				Design	As per Buyer's
				Description of Origin	Yes
			Drop Test	Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	62
			Container Stuffing(40' container)		700 Sets
G-19	**Material**		Cabinet	Front	PS 94V0 DECABROM
				Rear	PS 94V0 DECABROM
				Jack Panel	-
			PCB	Non-Halogen Demand	No
				Eyelet Demand	Yes

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the AC cord from the AC cord hook ②.
3. Remove the Back Cabinet in the direction of arrow.

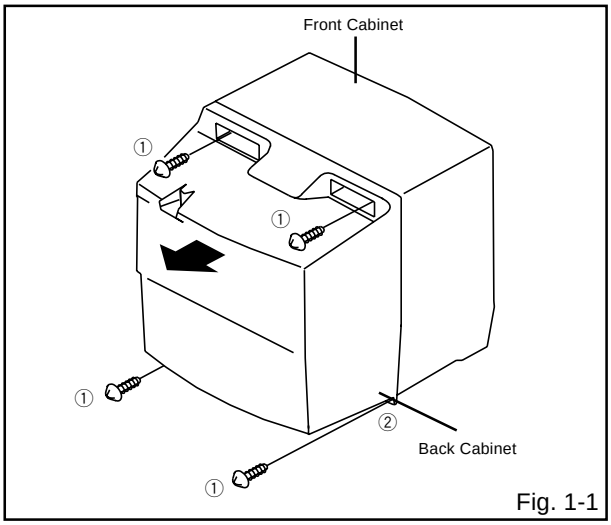


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap.
   (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors:
   (CP801 and CP851B).
3. Remove the CRT PCB in the direction of arrow.

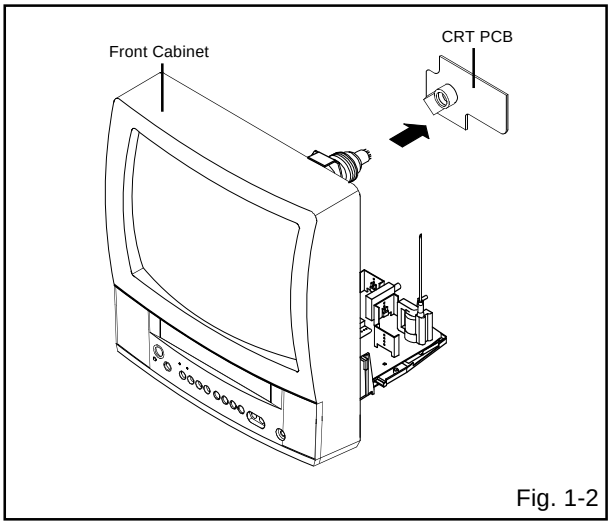


Fig. 1-2

1-3: TV/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:
   (CP352, CP401 and CP502).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

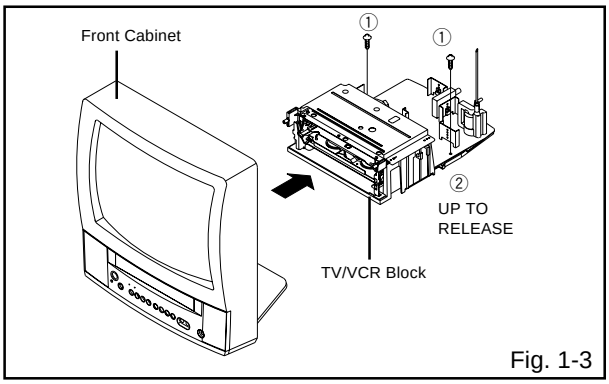


Fig. 1-3

1-4: DECK CHASSIS AND SYSCON PCB (Refer to Fig. 1-4)

1. Remove the 2 screws ①.
2. Remove the screw ②.
3. Remove the Deck Shield Plate in direction of arrow (A).
4. Remove the 3 screws ③.
5. Disconnect the following connectors:
   (CP1001, CP4001, CP4002 and CP4003).
6. Remove the Deck Chassis in the direction of arrow (B).
7. Remove the screw ④.
8. Remove the Syscon PCB in the direction of arrow (C).

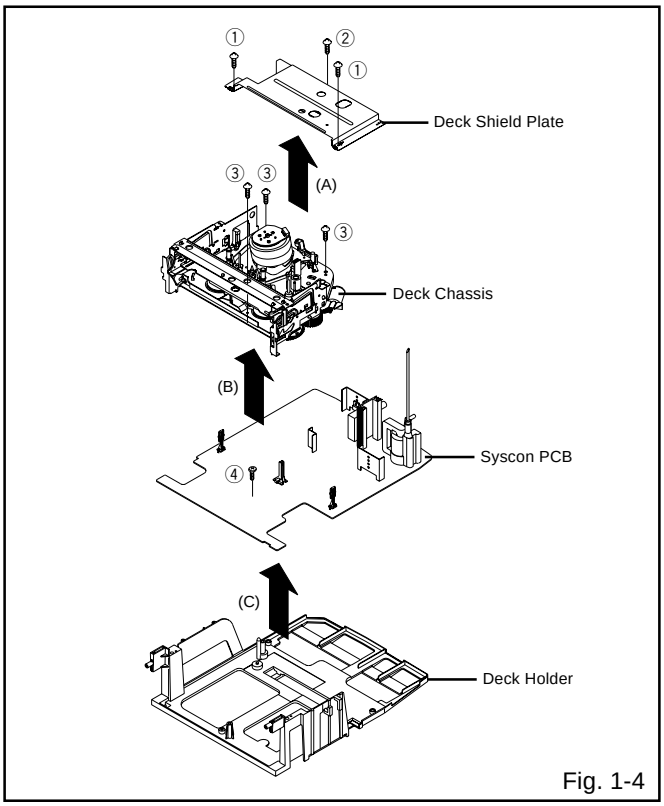


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

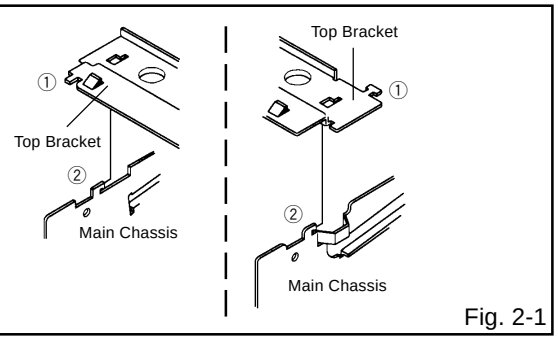


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

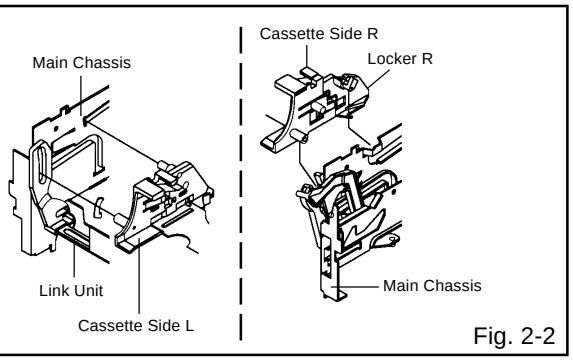


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

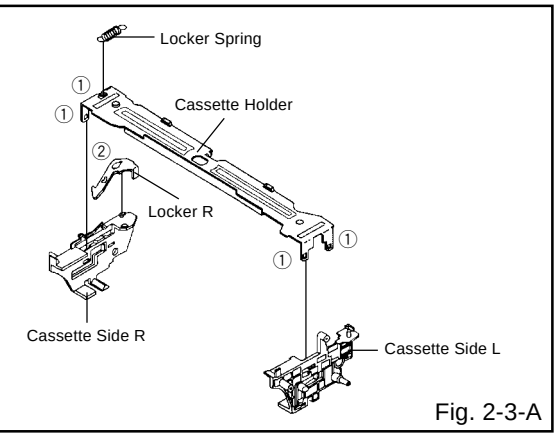


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the one position of Fig.2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

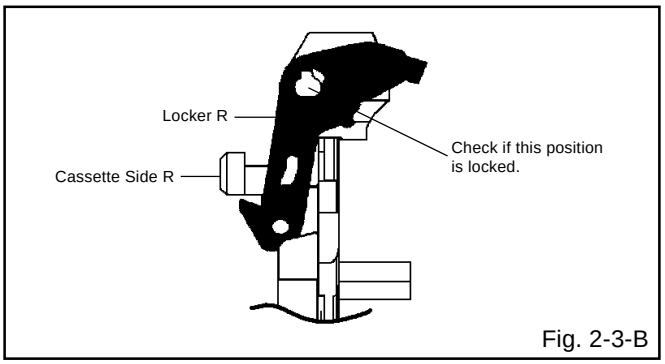


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

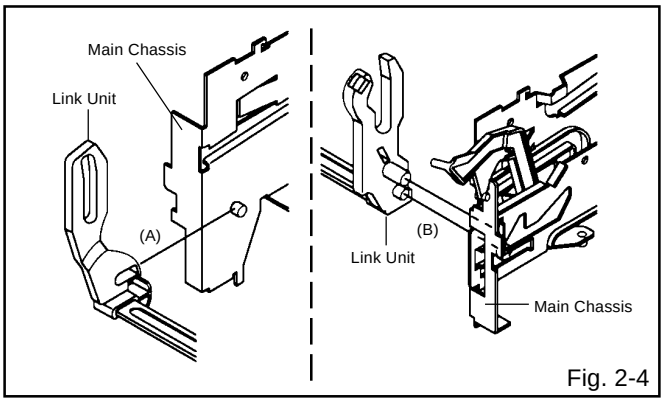


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER/BOT COVER (Refer to Fig. 2-5)

1. Unlock the support ①.
2. Remove the BOT Cover.
3. Extend the support ②.
4. Remove the Link Lever.
5. Remove the Flap Lever.

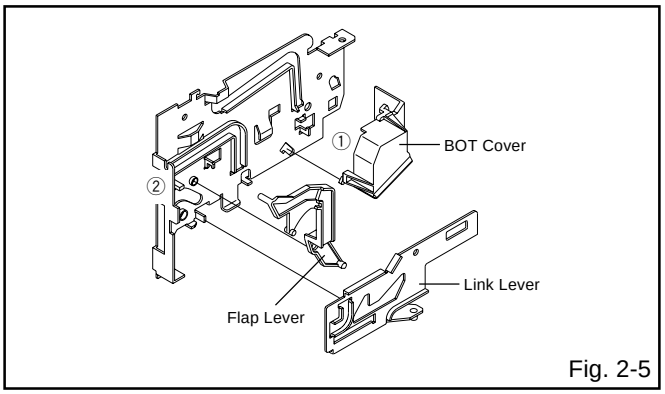


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

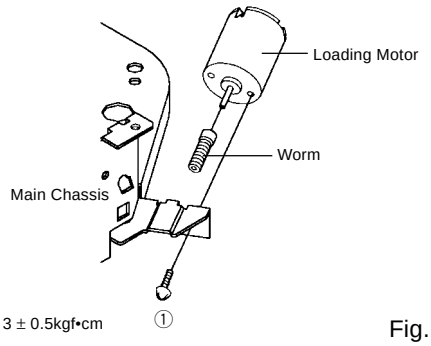


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

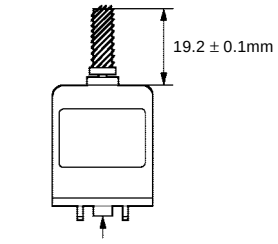


Fig. 2-6-B

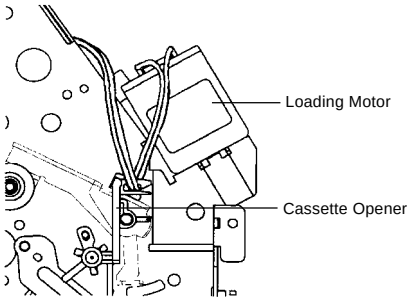


Fig. 2-6-C

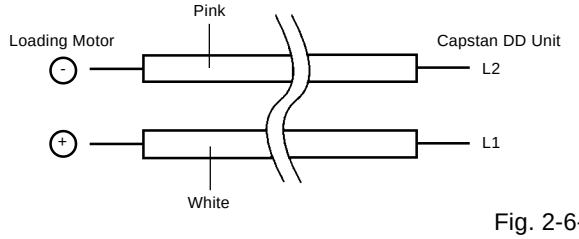


Fig. 2-6-D

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

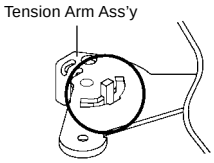


Fig. 2-7-A

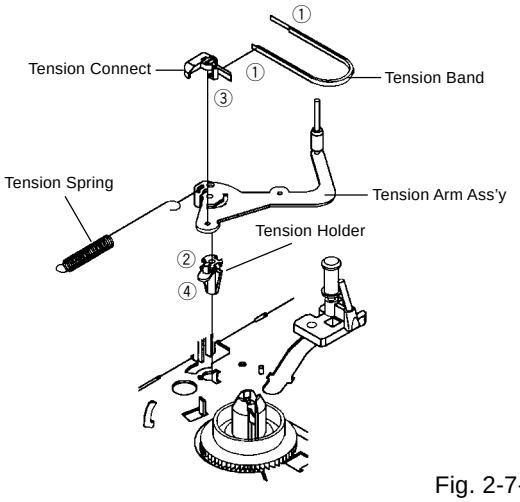


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-7-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

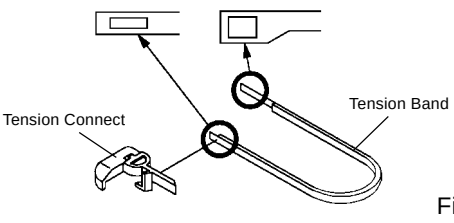


Fig. 2-7-C

DISASSEMBLY INSTRUCTIONS

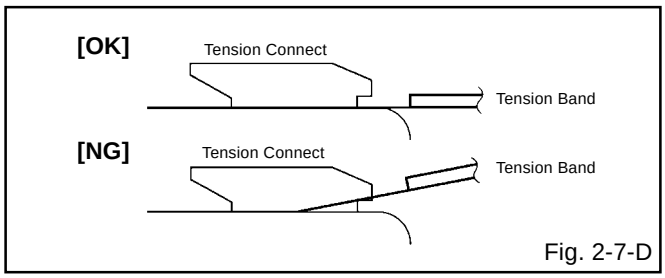


Fig. 2-7-D

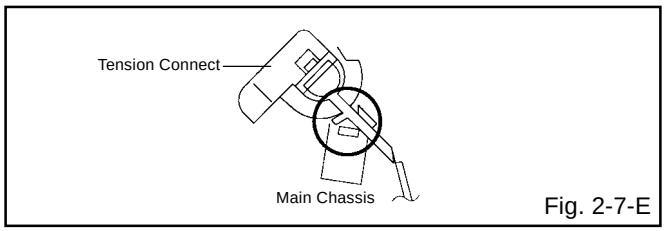


Fig. 2-7-E

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

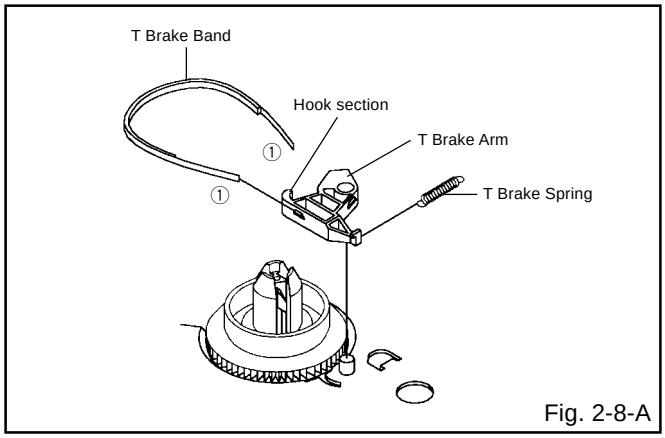


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

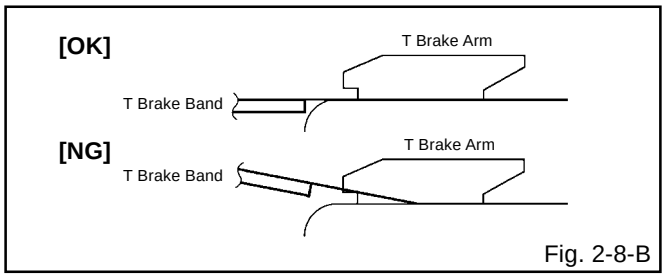


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-9-A)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it. (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

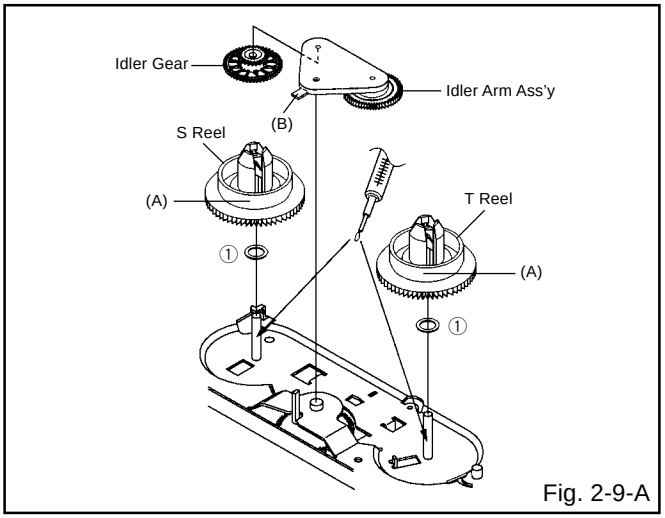


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-9-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

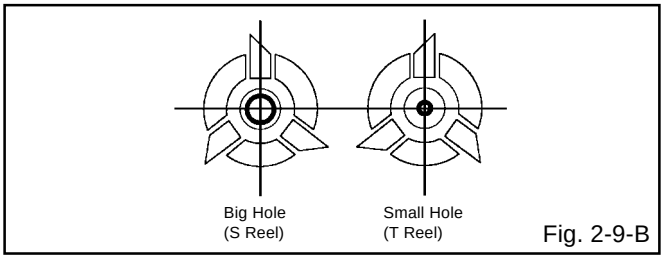


Fig. 2-9-B

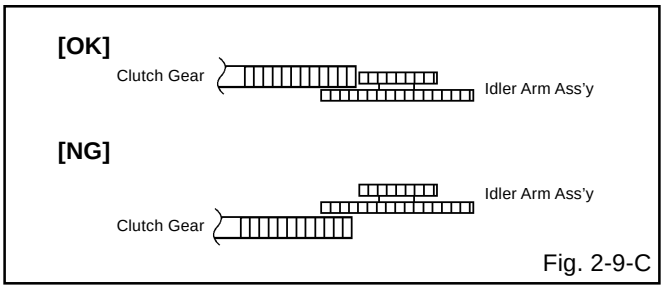


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

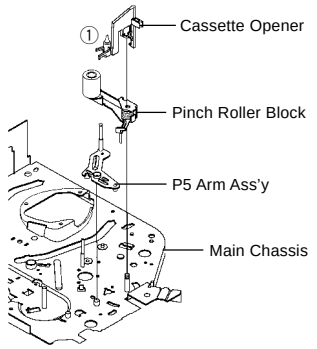


Fig. 2-10-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

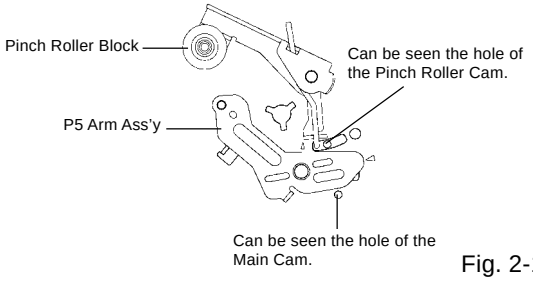


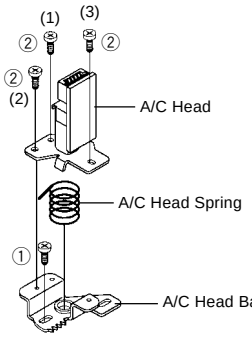
Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).



• Screw Torque: 5 ± 0.5kgf•cm (Screw ①)

Fig. 2-11-A

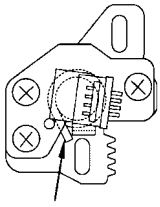
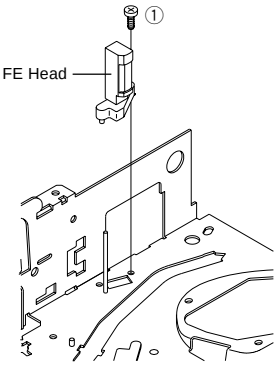


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.



• Screw Torque: 5 ± 0.5kgf•cm
• The FE Head is not installed on the Video Cassette Player.

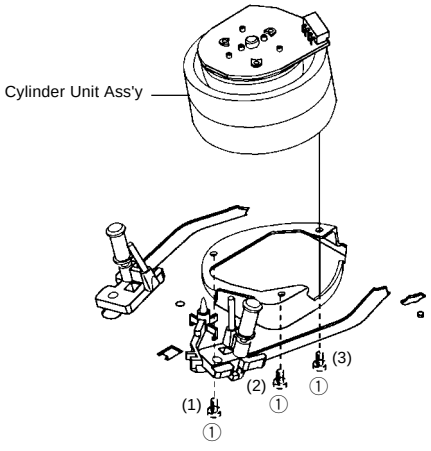
Fig. 2-12

2-13: CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Disconnect the following connector: (CD2001)
2. Remove the 3 screws ①.
3. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



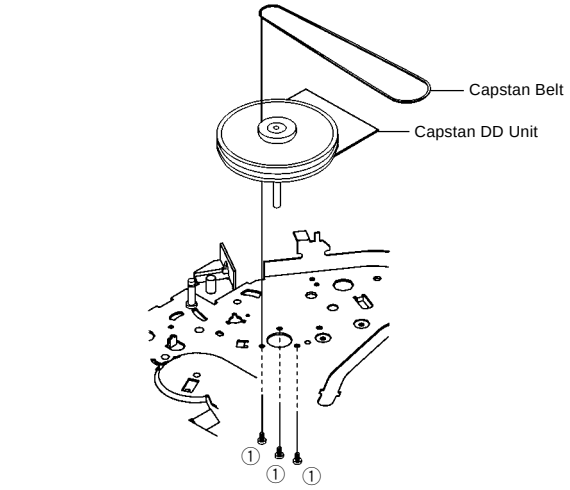
• Screw Torque: 3 ± 0.5kgf•cm

Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



• Screw Torque: 4 ± 0.5kgf•cm

Fig. 2-14-A

NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal noise will be heard on the deck operation.) **(Refer to Fig. 2-14-B, C)**

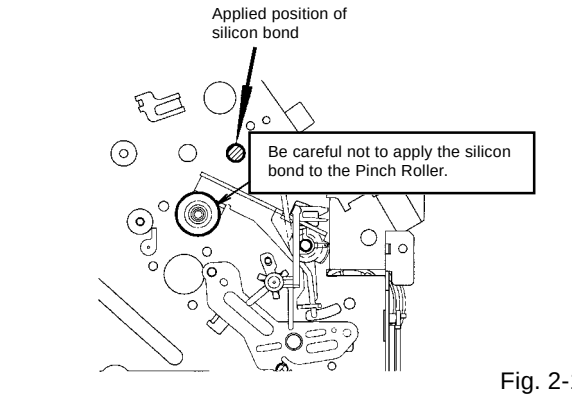


Fig. 2-14-B

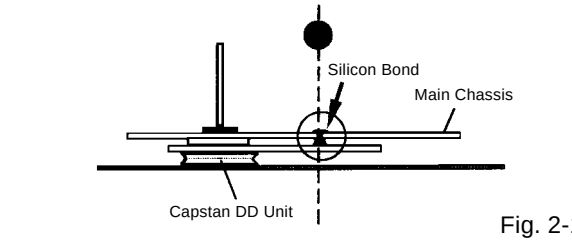


Fig. 2-14-C

2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.

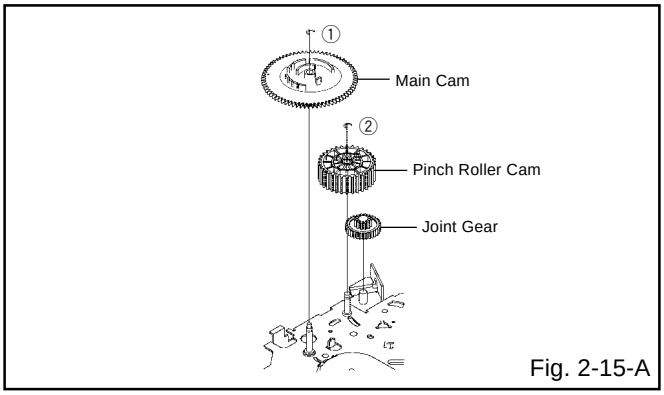


Fig. 2-15-A

NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. **(Refer to Fig. 2-15-B)** And also can be seen the Main Chassis hole through the Main Cam maker hole.

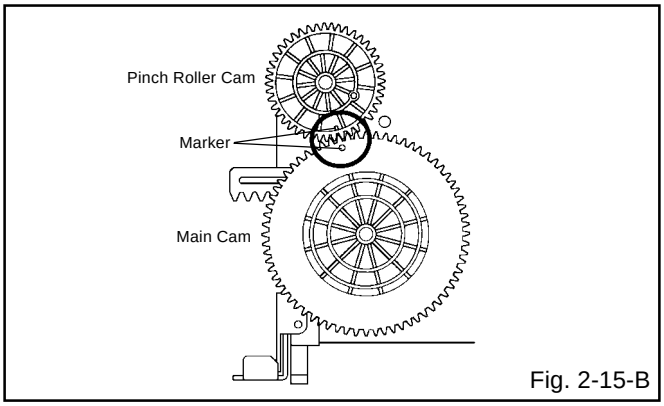


Fig. 2-15-B

2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

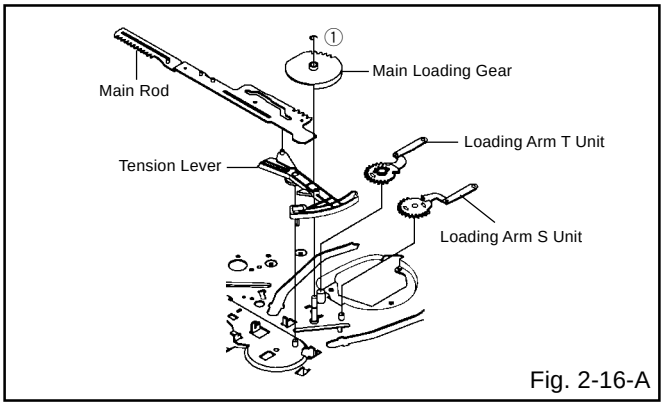


Fig. 2-16-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-16-B)**

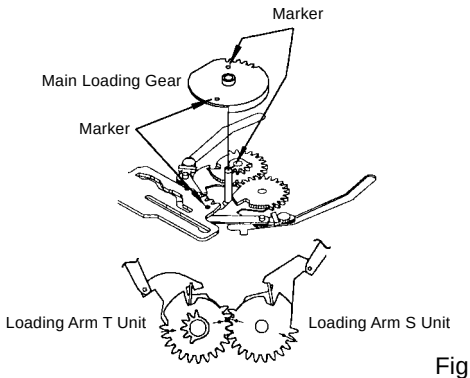


Fig. 2-16-B

2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

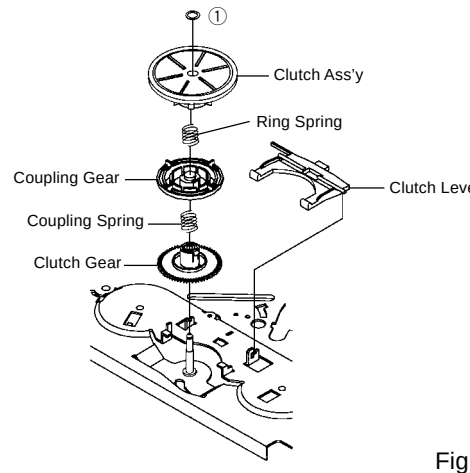


Fig. 2-17-A

NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. **(Refer to Fig. 2-17-B)**

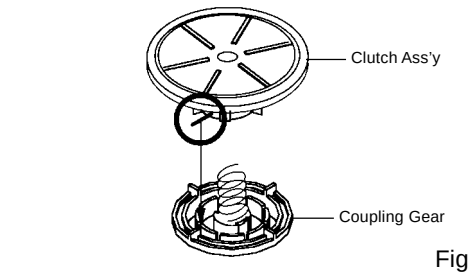


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP/LED REFLECTOR (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.

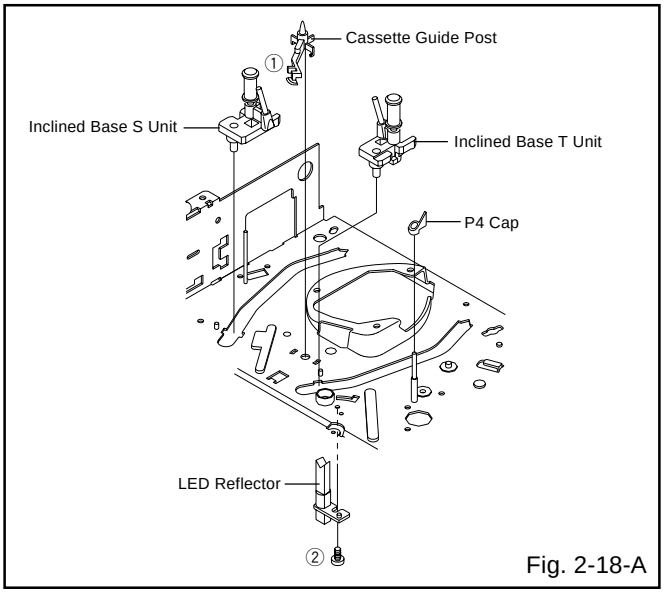


Fig. 2-18-A

NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

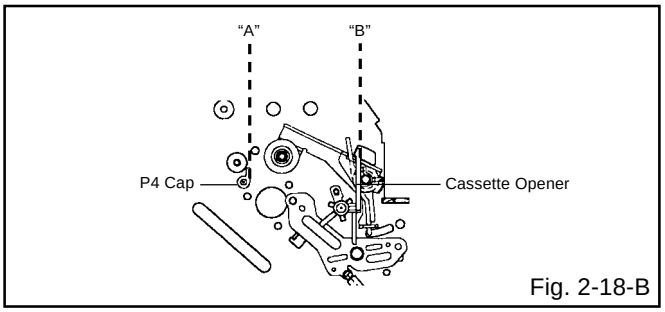


Fig. 2-18-B

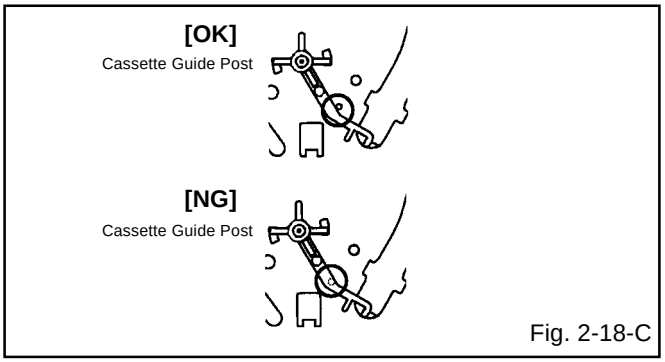


Fig. 2-18-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 3-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

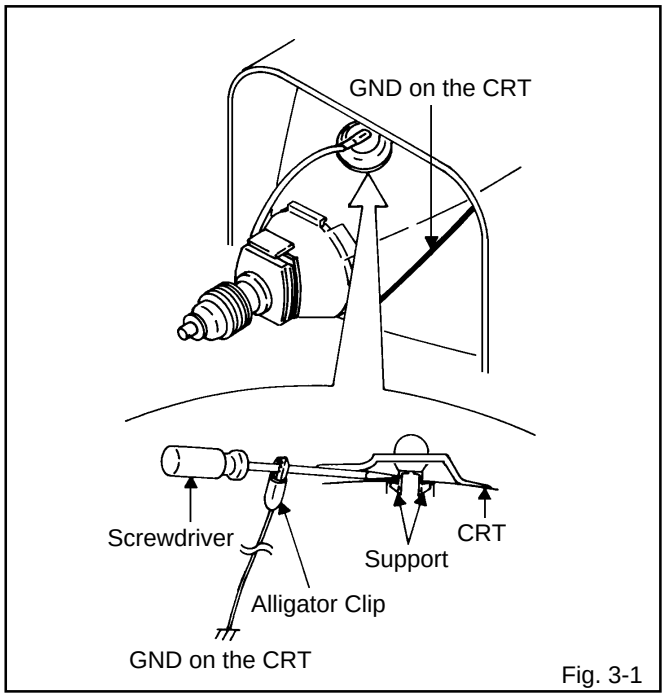


Fig. 3-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 3-2.)**

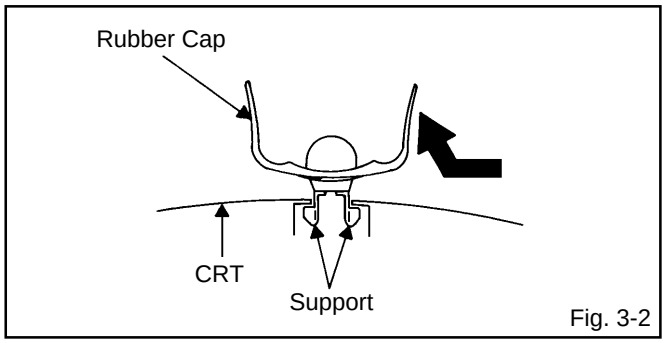


Fig. 3-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

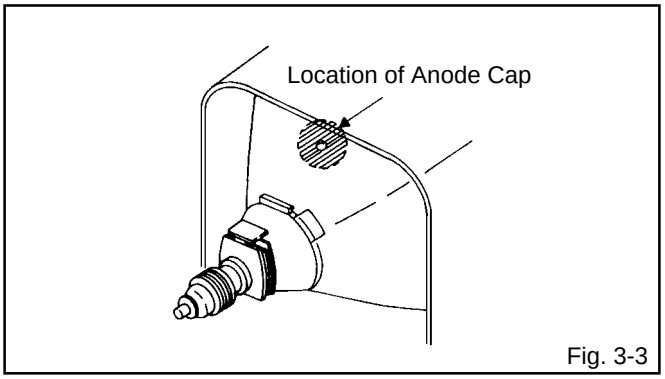


Fig. 3-3

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**

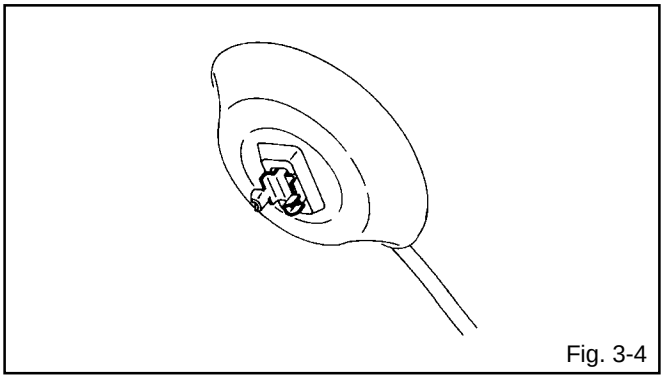


Fig. 3-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 3-5**.

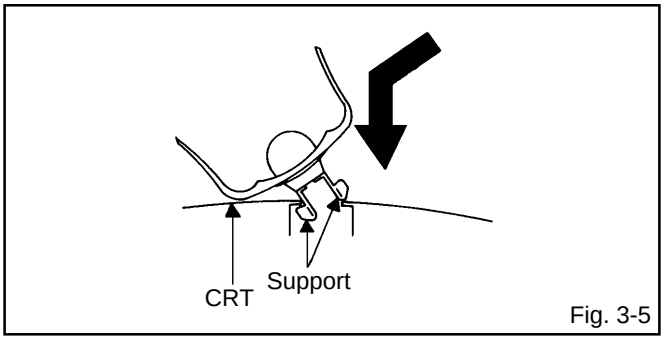


Fig. 3-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 4-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

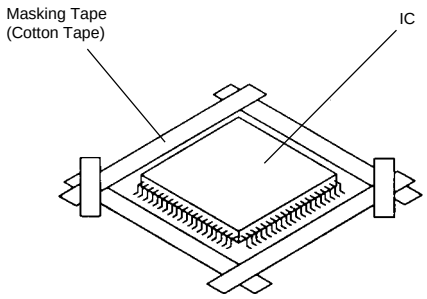


Fig. 4-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 4-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

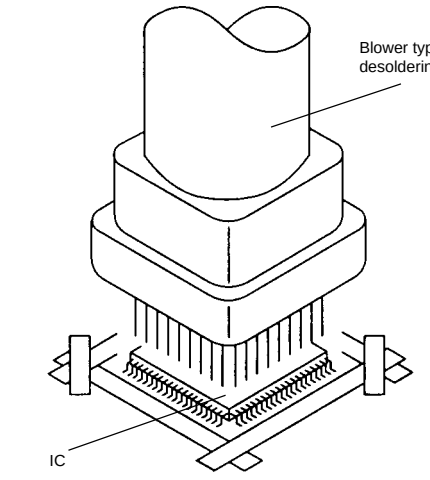


Fig. 4-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 4-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

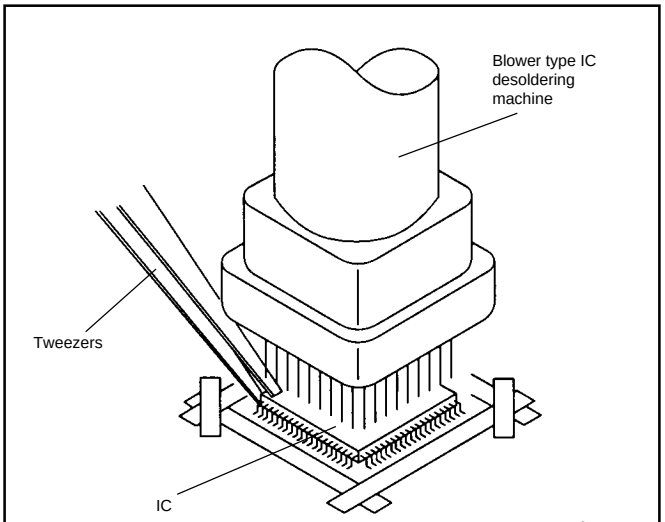


Fig. 4-3

4. Peel off the Masking Tape.

5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 4-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

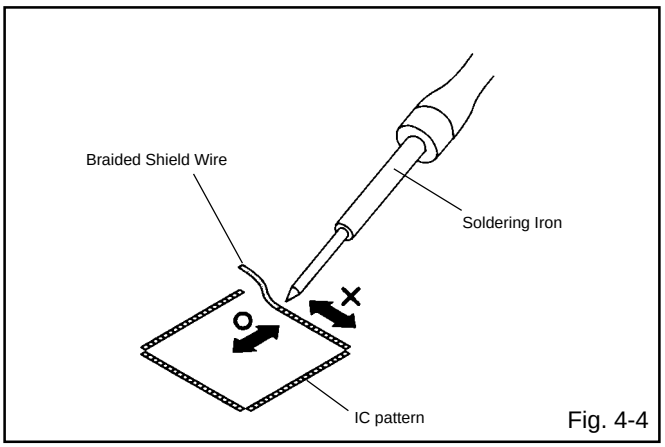


Fig. 4-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 4-5.)**

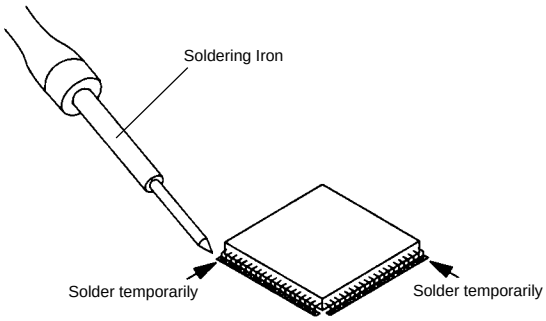


Fig. 4-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 4-6.)**

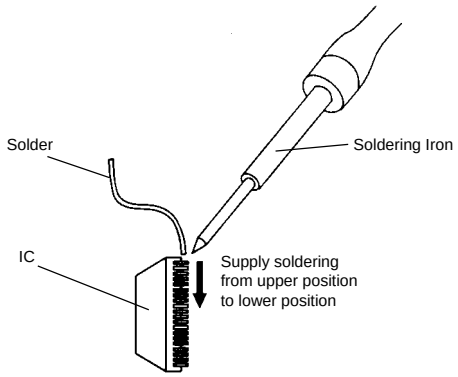


Fig. 4-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 4-7.)**

   NOTE

   Do not absorb the solder to excess.

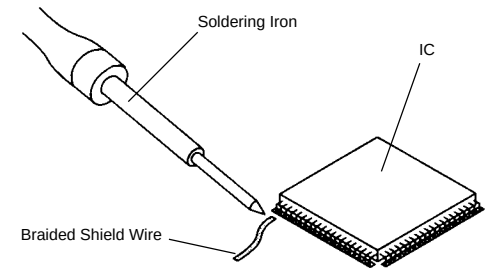


Fig. 4-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 4-8.)**

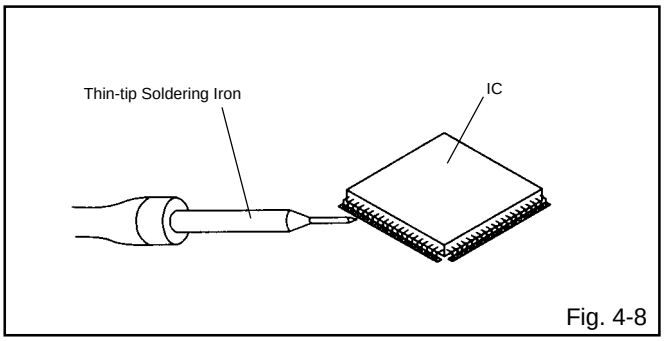


Fig. 4-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	**A/C**	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	**BGP**	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	**C**	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	**DATA (SY-CE)**	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	**E**	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	**F**	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flip-flop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	**GEN**	:	Generator
	GND	:	Ground
H	**H.P.F**	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	**IC**	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	**KIL**	:	Killer
L	**L**	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	**M**	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	**NC**	:	Non Connection
	NR	:	Noise Reduction
O	**OSC**	:	Oscillator
	OPE	:	Operation
P	**PB**	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	**R**	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	**S. CLK**	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play

KEY TO ABBREVIATIONS

S	**STB**	:	Serial Strobe
	SW	:	Switch
	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter SERVICE MODE, unplug AC cord till lost actual clock time. Then press and hold Vol (-) button of main unit and remocon key simultaneously.

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, the POWER ON total hours, and PLAY/REC total hours.
VOL. (-) MIN	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	Adjusting of the Tracking to the center position.
VOL. (-) MIN	6	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

Method	Operations
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT, and the Reel Sensor do not work and the deck can be operated without a cassette tape. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.
Parts replacing time does not mean the life span for individual parts.
Also, long term storage or misuse may cause transformation and aging of rubber parts.
The following list means standard hours, so the checking hours depends on the conditions.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

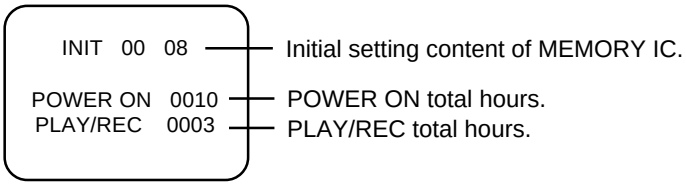
■ : Clean
● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

POWER ON total hours and PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".
The confirmation of using hours will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and the Channel button **(6)** on the remote control simultaneously.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

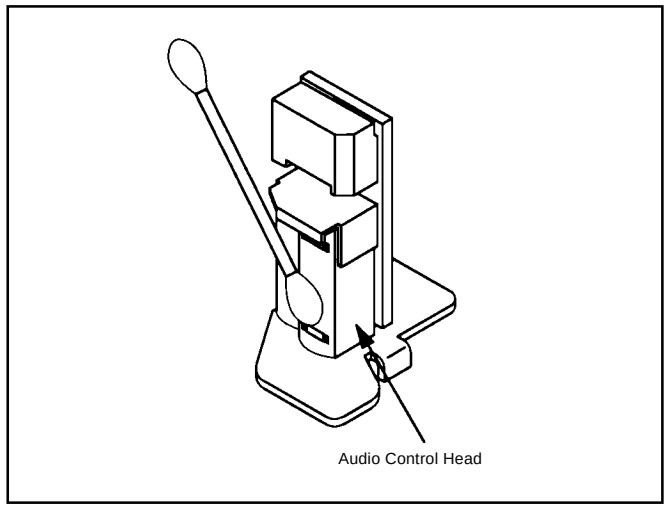
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

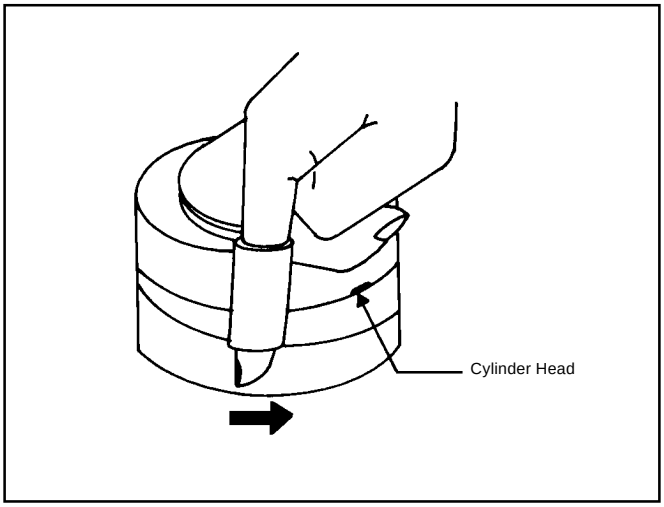
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: No need setting for after INI 2F due to the adjustment value.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	08	0A	70	6B	C2	B3	24	A9	51	2C	00	06	00	40	00	10
10	B2	9A	92	93	00	11	31	05	08	82	A9	0F	94	45	06	14
20	06	3A	01	25	54	60	23	3B	DA	D7	00	00	00	00	00	00

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control.
   ADDRESS and DATA should appear as FIG 1.

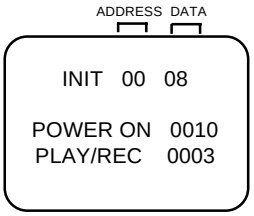


Fig. 1

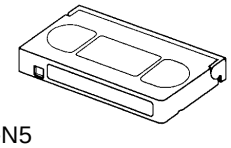
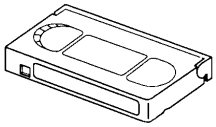
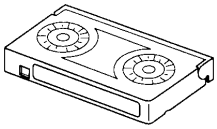
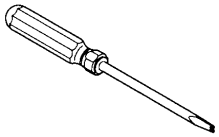
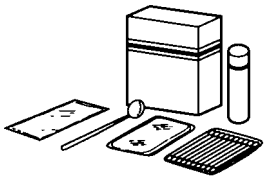
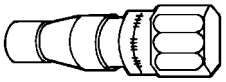
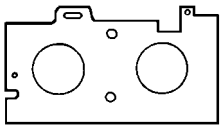
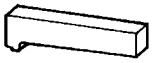
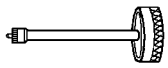
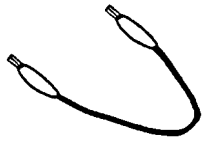
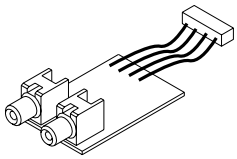
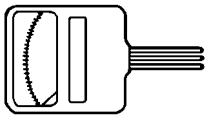
3. ADDRESS is now selected and should "blink". Using the SET +/- button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using SET +/- button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. While holding down VOLUME button on front cabinet, press key 1 on remote control.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

Alignment Tape  ST-N5 ST-NF	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
JG180 AV Jack Jig 	Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND
JG180	APJG180000	AV Jack Jig	PG Shifter Adjustment

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Remove the Syscon PCB from the set.
   Be sure to place the parts on a paper so that they have no short-circuit each other.
2. Short circuit between **TP1001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the deck can be operated without a cassette tape.)
3. In case of using a cassette tape, press the STOP/EJECT button to insert or eject a cassette tape.
   Turn on the power and re-check the cable before checking the trouble points.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

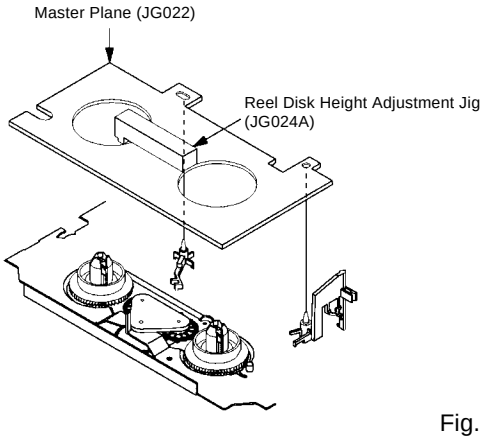


Fig. 1-1-A

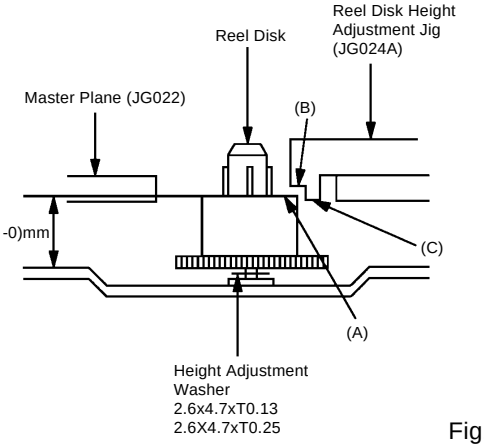


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

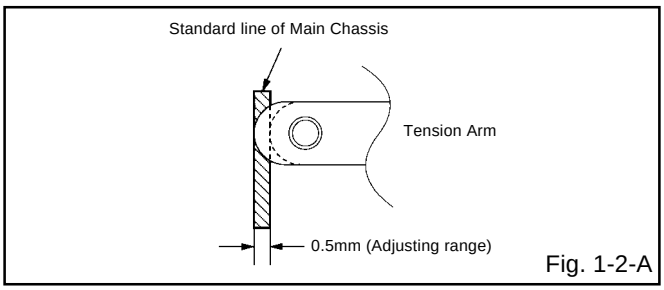


Fig. 1-2-A

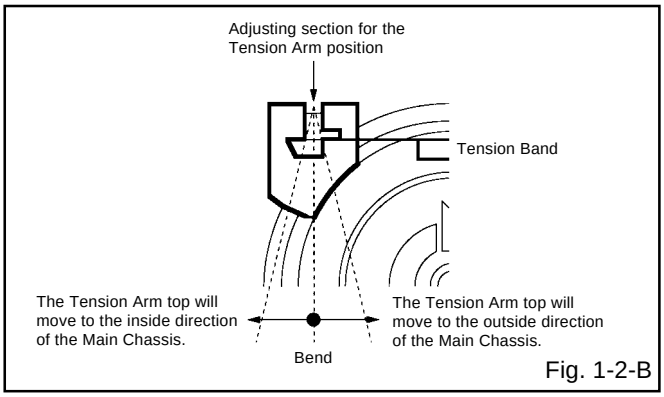


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

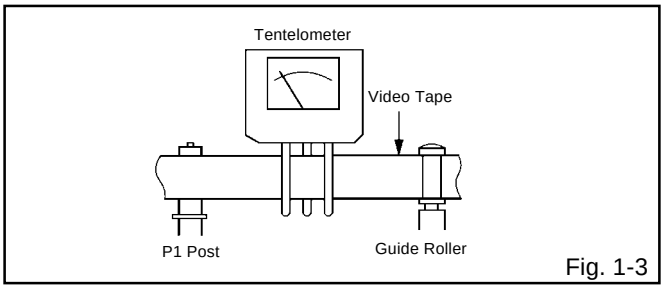


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4-B)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

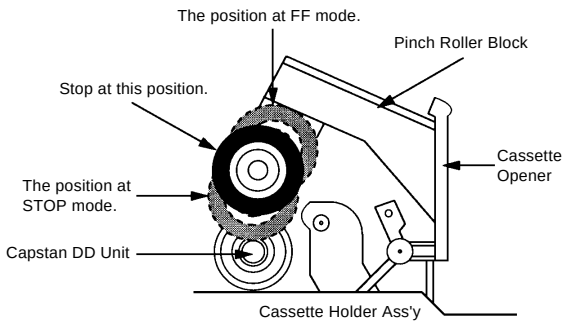


Fig. 1-4-A

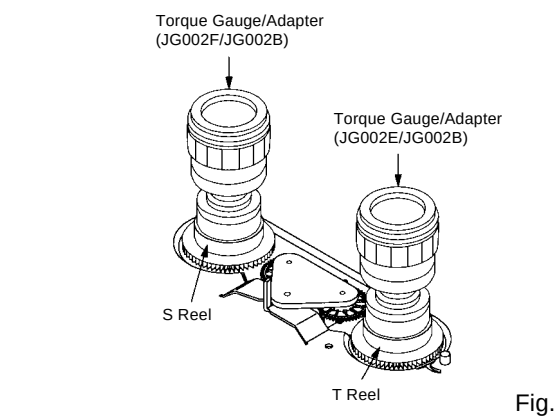


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape.
2. Connect CH-1 of the oscilloscope to **TP4001 (Envelope)** and CH-2 to **TP1002 (SW Pulse)**.
3. Press both VOL. DOWN button on the set and the Channel button **(5)** on the remote control simultaneously.
4. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat.
   Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback.
   (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head.
(Refer to item 2-2)

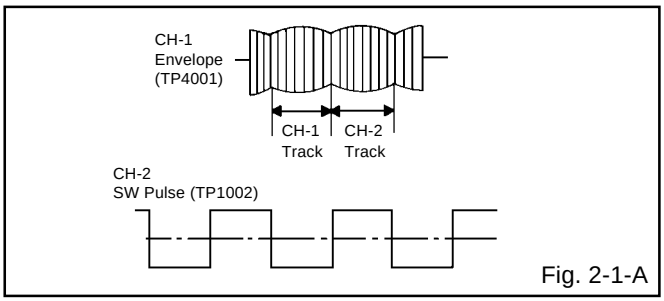


Fig. 2-1-A

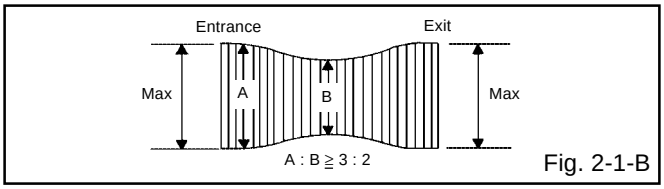


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape.
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Cap as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

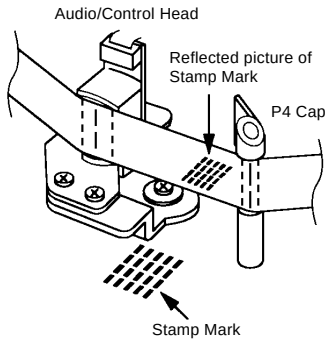


Fig. 2-2-A

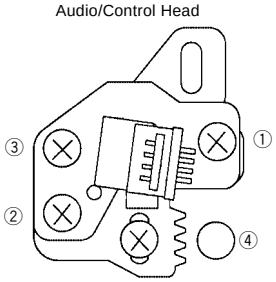


Fig. 2-2-B

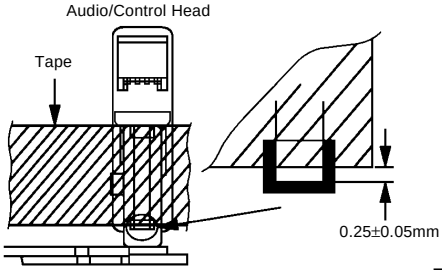


Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect the connector of AV Jack Jig **(JG180)** to **CP1003**.
6. Connect CH-1 of the oscilloscope to **TP1002**, CH-2 to **TP4001** and CH-3 to **Hot side of JG180 Audio out Jack**.
7. Playback the VHS Alignment Tape.
8. Press both VOL. DOWN button on the set and the Channel button **(5)** on the remote control simultaneously.
9. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-3**.

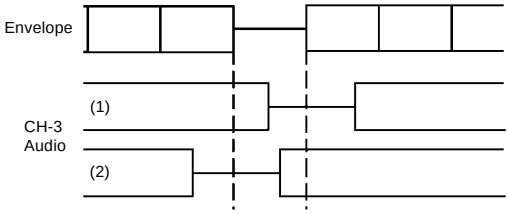
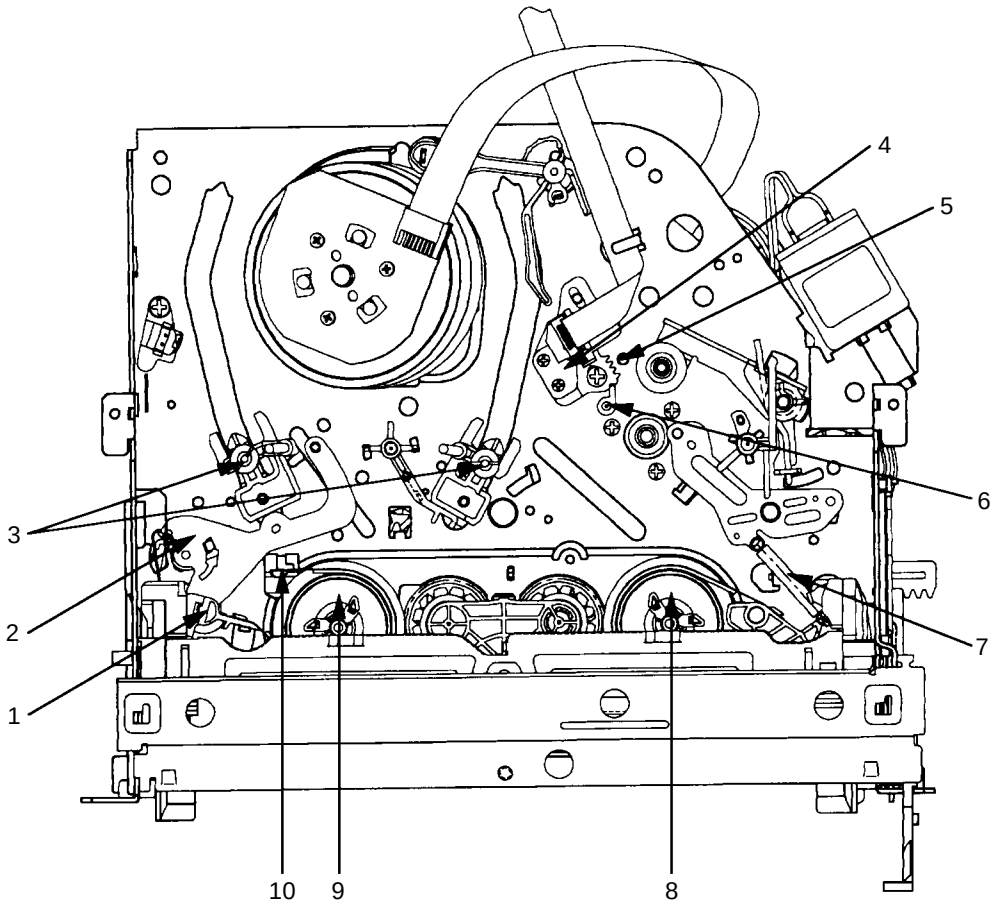


Fig. 2-3

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter

On-Screen Display Adjustment

1. Unplug the AC plug for more than 5 seconds to set the clock to the non-setting state. Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control simultaneously to appear the adjustment mode on the screen as shown in **Fig. 1-1.**

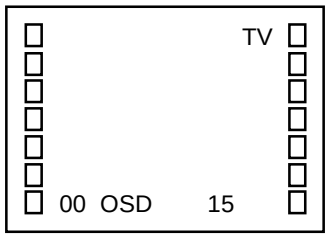


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2**.
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	16	CONT.CENT
01	CUT OFF	17	CONT.MAX
02	RF AGC	18	CONT.MIN
03	V.VCO	19	COL.CENT
04	H.VCO	20	COL.MAX
05	H.PHAS	21	COL.MIN
06	V.SIZE	22	TINT
07	V.SFT	23	SHARP
08	R.DRV	24	FM.LVL
09	B.DRV	25	LVL
10	R CUT OFF	26	SEP1
11	G CUT OFF	27	SEP2
12	B CUT OFF	28	T.MONO
13	BRI.CENT	29	T.STE
14	BRI.MAX		
15	BRI.MIN		

Fig. 1-2

2. BASIC ADJUSTMENTS (VCR SECTION)

2-1: PG SHIFTER

1. Connect the connector of AV Jack Jig **(JG180)** to **CP1003**.
2. Connect CH-1 on the oscilloscope to **TP1002** and CH-2 to **Hot side of JG180 Video out Jack**.
3. Playback the alignment tape.
4. Press both VOL.DOWN button on the set and the Channel button **(5)** on the remote control simultaneously to set tracking to center.
5. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

6. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears.
7. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button **(4)** on the remote control simultaneously and adjust the
8. Tracking +/- button until the arising to the down of Head Switching Pulse becomes 6.5 ± 0.5H. **(Refer to Fig. 2-1-A, B)**
9. Press the Tracking Auto button.

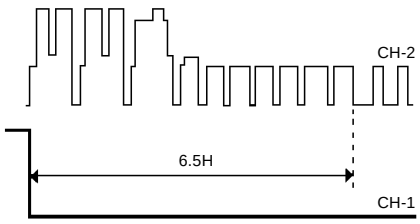


Fig. 2-1-A

ELECTRICAL ADJUSTMENTS

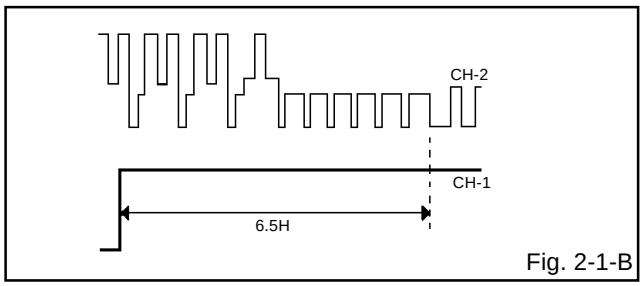


Fig. 2-1-B

2-2: VCO FREERUN

1. Receive the VHF HIGH (63dB).
2. Place the set with Aging Test for more than 10 minutes.
3. Connect the digital voltmeter between the **pin 5 of CP351** and the **pin 1 (GND) of CP351**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "V.VCO".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.5V.
6. After the 2.5V adjustment, countdown the VIF VCO step No. by 1 step with the VOL. DOWN button.

2-3: RF AGC

1. Receive the VHF HIGH (63 ± 1dB).
2. Connect the digital voltmeter between the **pin 5 of CP351** and the **pin 1 (GND) of CP351**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(02)** on the remote control to select "RF AGC".
4. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.7 ± 0.05V.

(TV SECTION)

2-4: CONSTANT VOLTAGE

1. Using the remote control, set the brightness and contrast to normal position.
2. Connect the digital voltmeter to **TP601** (R520).
3. Set condition is AV MODE without signal.
4. Adjust the **VR502** until the digital voltage is 135 ± 0.5V.

2-5: CUT OFF

1. Adjust the unit to the following settings.
   R CUT OFF=127, G CUT OFF=127, B CUT OFF=127, SUB BRI.CENT=127, SUB CONT.MAX=100
2. Place the set with Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Using the remote control, set the brightness and contrast to normal position.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

2-6: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the color bar pattern.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(10)** on the remote control to select "R CUT OFF".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R CUT OFF.
6. Press the CH. UP/DOWN button on the remote control to select the "R DRIVE", "B DRIVE", "G CUT OFF" or "B CUT OFF".
7. Using the VOL. UP/DOWN button on the remote control, adjust the R DRIVE, B DRIVE, G CUT OFF or B CUT OFF.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

2-7: FOCUS

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Turn the Focus Volume fully counterclockwise once.
4. Adjust the **Focus Volume** until picture is distinct.

2-8: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(05)** on the remote control to select "H PHAS".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-9: VERTICAL SHIFT

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V SFT".
4. Check if the step No. V. SHIFT is "03".
5. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask.

ELECTRICAL ADJUSTMENTS

2-10: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes 10 ± 2%.

2-11: SUB BRIGHTNESS

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "BRI.CENT".
4. Press the VOL. UP/DOWN button on the remote control until the white 10% is starting to be visible.
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

2-12: SUB CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "CONT.MAX".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "100".
3. Receive a broadcast and check if the picture is normal.
4. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.

2-13: SUB TINT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP801**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "TINT".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line. **(Refer to Fig. 2-2)**
6. Receive the color bar pattern. (Audio Video Input)
7. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

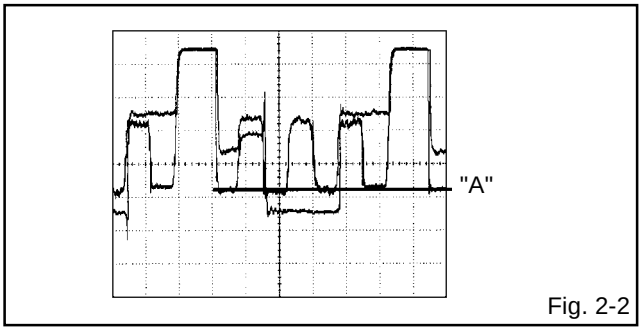


Fig. 2-2

2-14: SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP803**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(19)** on the remote control to select "COL.CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 110 ± 10% of the white level. **(Refer to Fig. 2-3)**
7. Receive the color bar pattern. (Audio Video Input)
8. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.

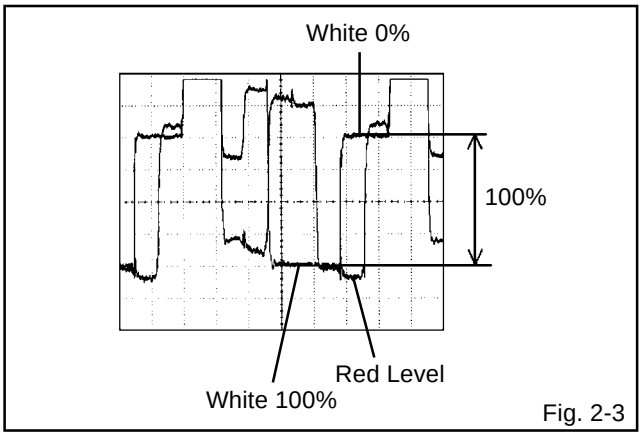


Fig. 2-3

ELECTRICAL ADJUSTMENTS

2-15: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-4)**

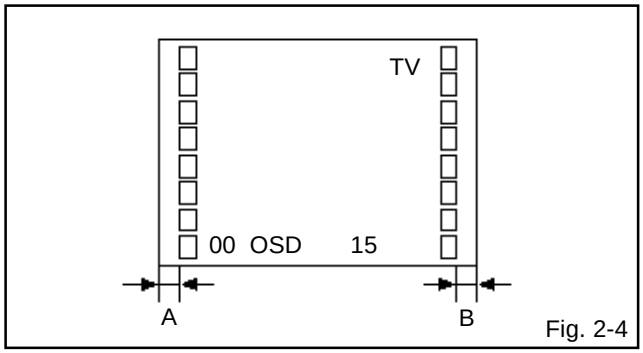


Fig. 2-4

2-16: SUB SHARPNESS

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "SHARP".
2. Check if the step No. of SHARPNESS is "35".
3. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 1~2.

2-17: H VCO

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(04)** on the remote control to select "H VCO".
2. Check if the step No. of H VCO is "04".

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

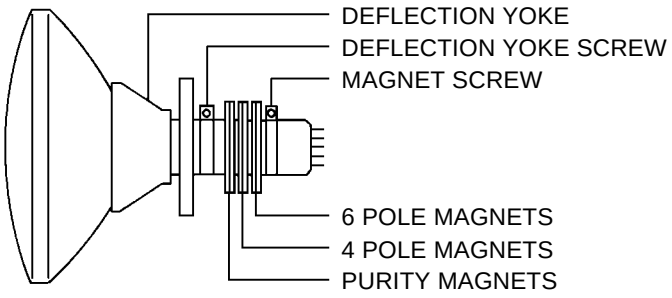


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

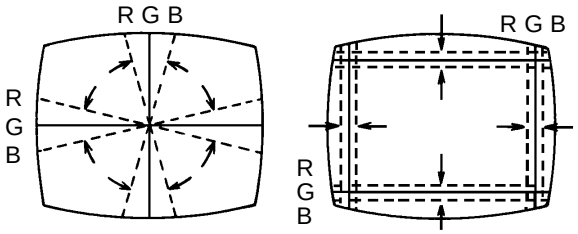
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

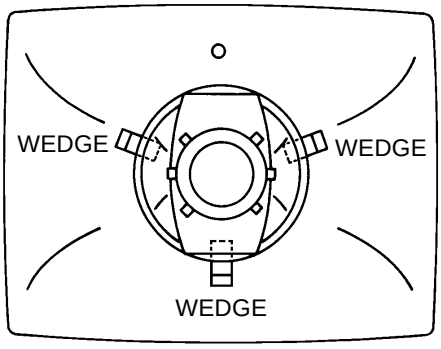
Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 3-2-a

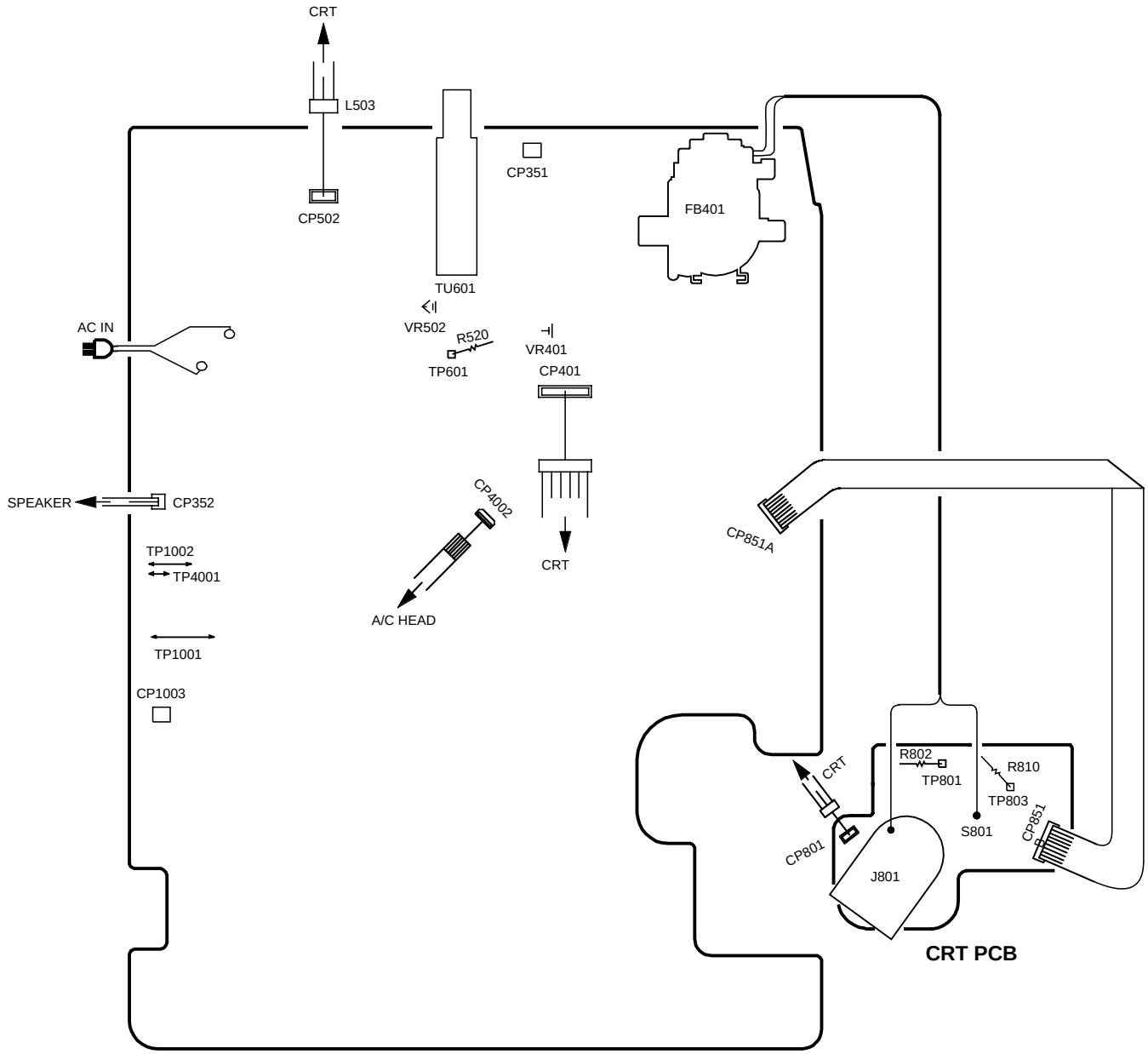


WEDGE POSITION

Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

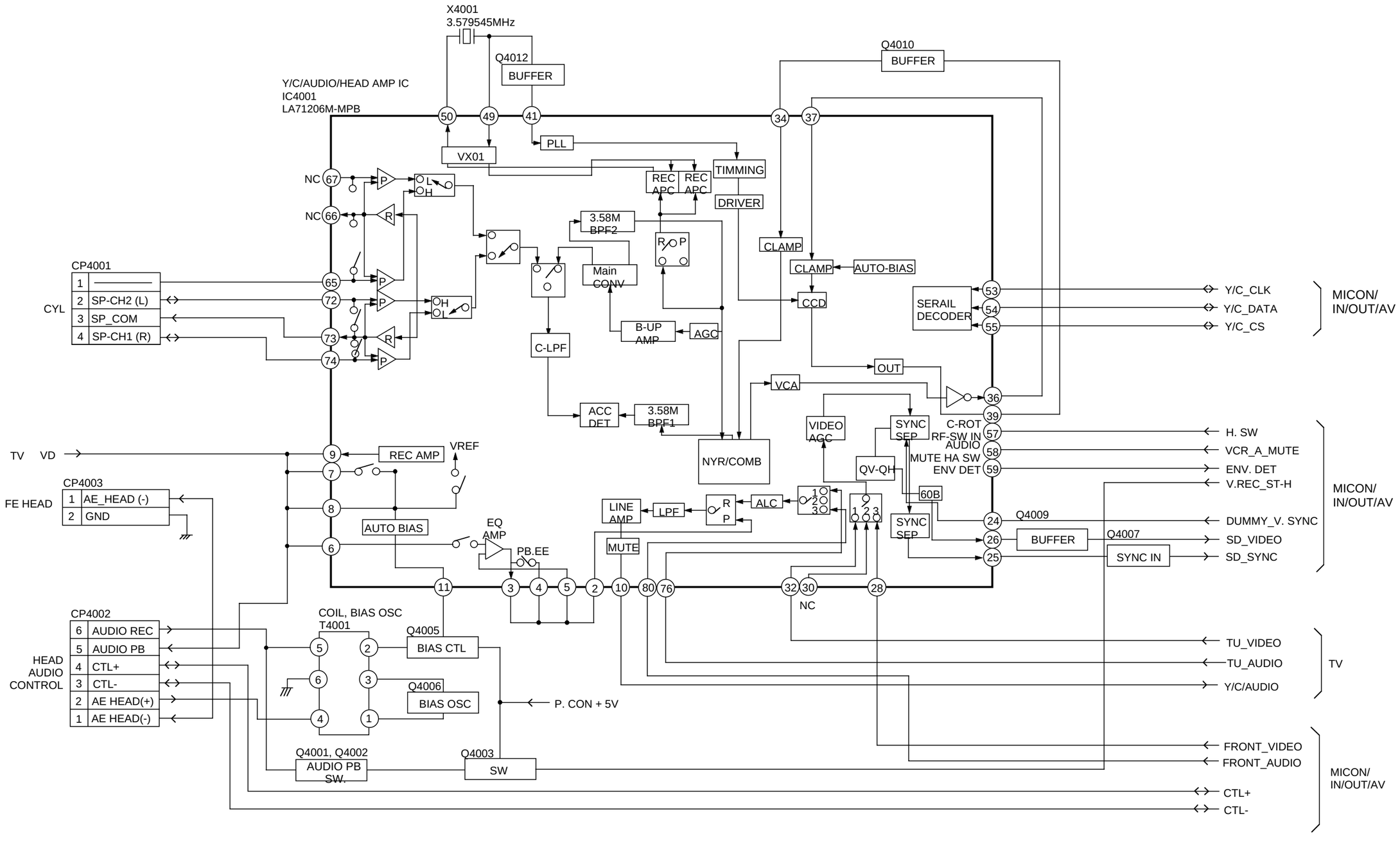
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



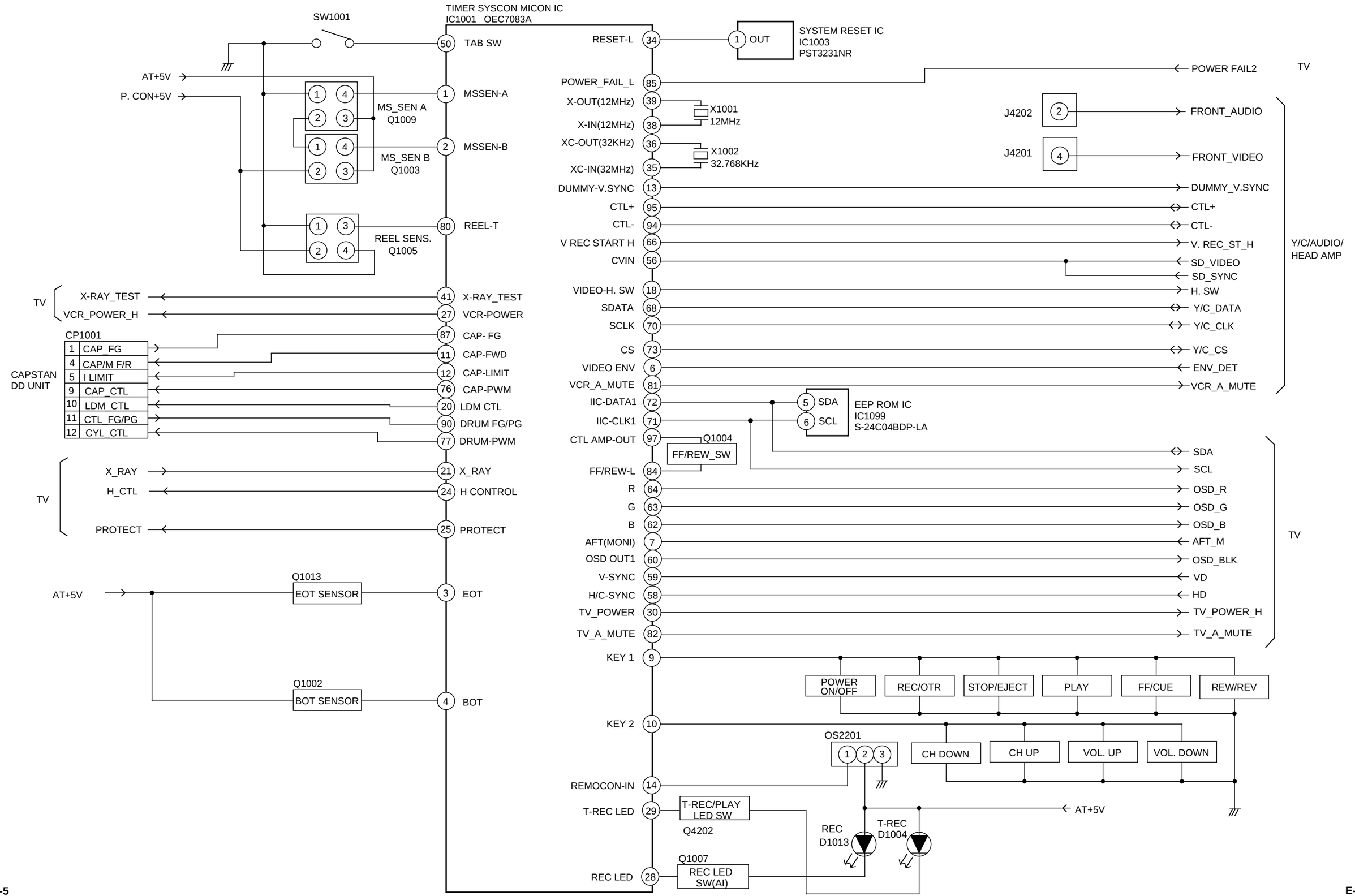
TV BLOCK DIAGRAM

MICON/ IN/OUT/AV
SCL
SDA
AT+5V_BACK UP
AT+12V
Y/C/AUDIO/ HEAD AMP
TU_AUDIO
TU_VIDEO
Y/C_AUDIO
Q602, Q603
REG.
Q606
REG.
AT+12V
Q601
BUFFER
Q604, Q605
REG.
AT+5V
CHROMA/IF IC
IC601 M61250FP
53 EXT AUDIO IN
58 VIF VIDEO OUT
42 VREG VCC
32 AT 5.7V REG OUT
47 8.7V REG OUT
49 P.CON 5.7V REG
28 POWER ON CONT
54 FM DIRECT OUT
TU601
1
4
5
11
SAW FILTER
CF601
1 4 3
59 RF AGC OUT
63 VIF IN (1)
64 VIF IN (2)
2 AFT OUT
31 ACL/ABCL
51 AUDIO OUT
26 SDA
27 SCL
24 FAST BLK
14 R OUT
15 G OUT
16 B OUT
5 V OUT
20 V PLUSE OUT
6 V RAMP FEED BACK
21 B IN
23 R IN
22 G IN
34 X' TAL
19 INV FBP OUT
10 FBP IN
11 H OUT
X602
3.579545MHz
V. OUTPUT IC IC401 AN5522
THERMAL PROTECTION
AMP
PUMP UP
VCC
1 2 3 5 7
Q607
H-CONTROL
H_CTL
MICON/ IN/OUT/AV
Q405
H-DRIVE
Q406
H. OUTPUT
DY
FB401
1 COL
2 +B
6 E180
7 ABL
9 AFC
10 HEA
3
HV
F
S
J801
F
8
3
7
9
V801 CRT
E180V
Q804
BLUE AMP
Q806
RED AMP
Q805
GREEN AMP
Y/C/AUDIO/ HEAD AMP
VD
Q612
CUT OFF SW
PROTECT
VD
HD
OSD_BLK
OSD_B
OSD_R
OSD_G
AFT_M
MICON/ IN/OUT/AV
MICON/ IN/OUT/AV
Q404
X-RAY
SW.
Q403
X-RAY_TEST
SW.
L503 DEGAUSS COIL
2 2
1 1
TH501
F501
AC IN
D518, D520, D521, D530
RECTIFIER
T501
8 11 13 14 5 16 3
Q511
SWITCHING
Q510
SWITCHING
FEED BACK
IC502 TLP621(GR)
Q507
FEED BACK SW.
+B ADJ
VR502
AT+12V
UNREG+8V
5V REG IC
IC501
KIA78R05PI
P. CON+5V
SOUND AMP IC
IC351 AN7511
2 6 5 8 1 4
J351
HEAD JACK
CD352
SP+
SP–
SP351
SPEAKER
POWER_FAIL 2
VCR_POWER-H
TV_POWER-H
TV_A_MUTE
MICON/ IN/OUT/AV

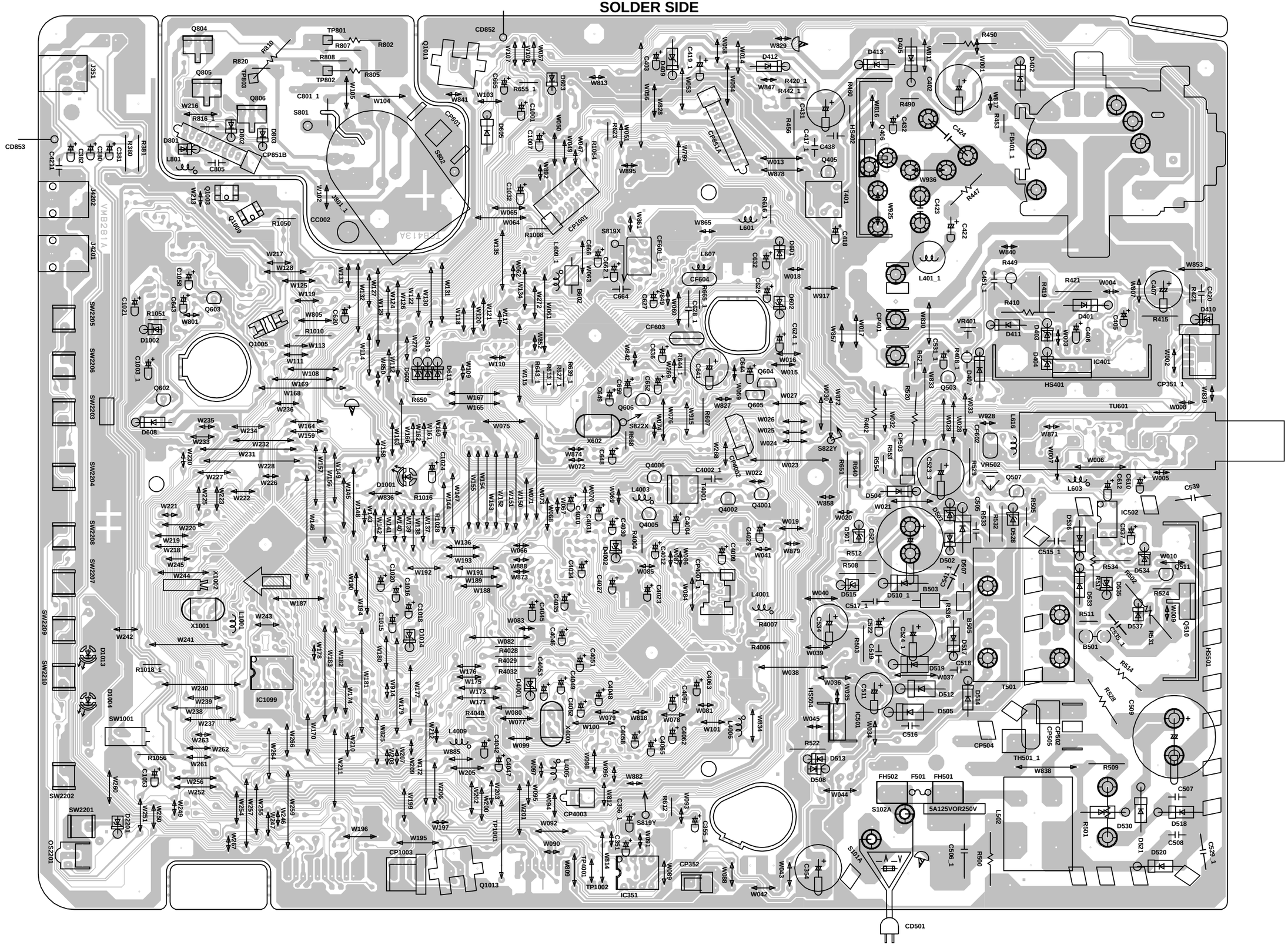
Y/C/AUDIO/HEAD AMP BLOCK DIAGRAM



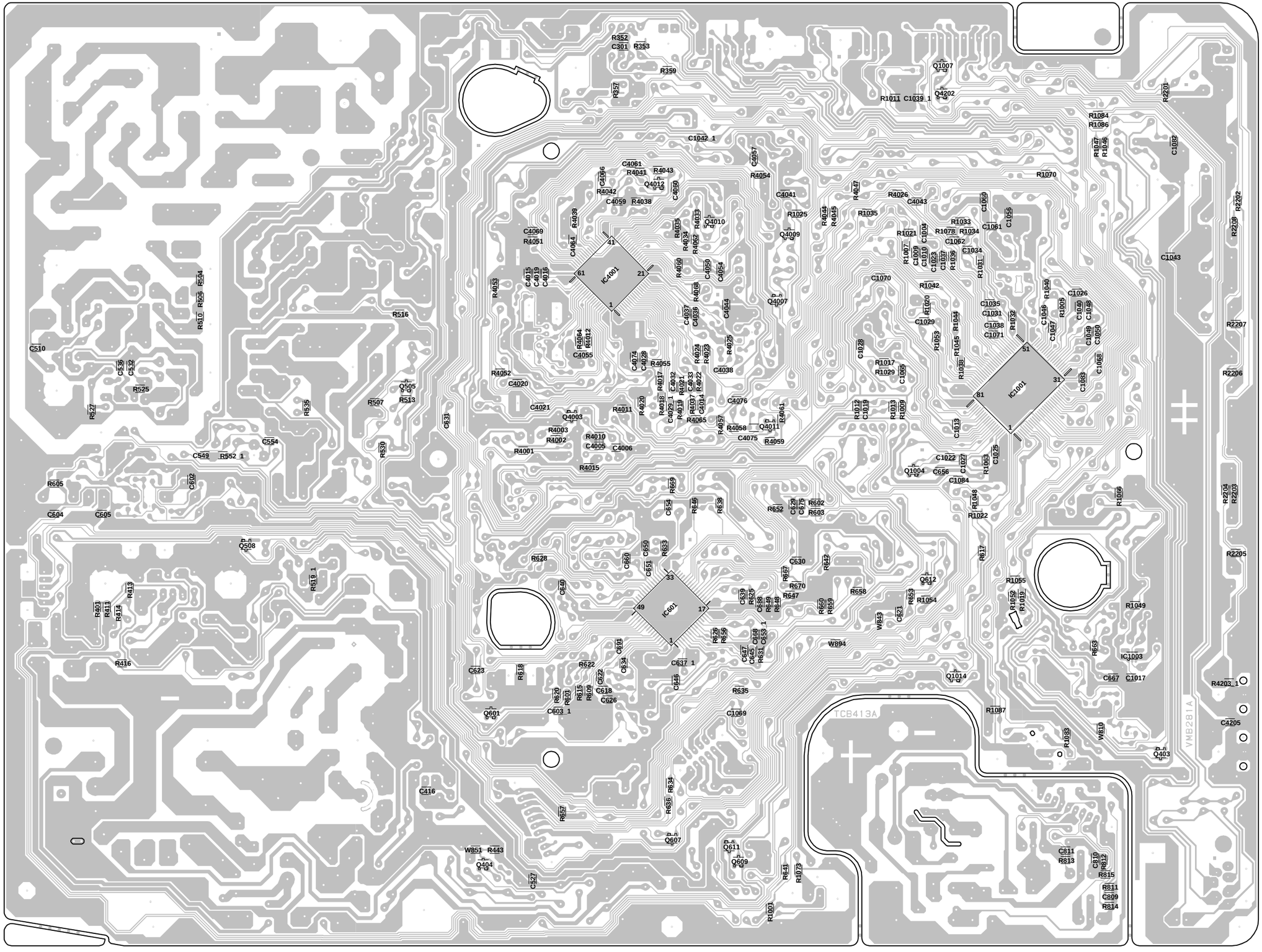
MICON/IN/OUT/AV BLOCK DIAGRAM



PRINTED CIRCUIT BOARDS
SYSCON/CRT (INSERTED PARTS)
SOLDER SIDE


CD852
CD853
CD501
J351
J4202
J4201
SW2205
SW2206
SW2203
SW2204
SW2208
SW2207
SW2209
SW2210
SW2202
SW2201
SW1001
VMB281A
CC002
CP801
CP851B
CP851A
CP1001
CP1003
CP4003
CP352
CP401
CP504
CP502
CP505
CP602
CP503
CP351_1
S801
S802
S819X
S819Y
S822X
S822Y
S101A
TP801
TP802
TP1001
TP1002
TU601
HS401
HS402
HS501
HS504
FH502
FH501
F501
5A125VOR250V
S102A
FB401_1
TH501_1
IC1099
IC401
IC351
IC502
X1001
X1002
X602
X4001
T401
T501
L401_1
L601
L607
L609_1
L603
L4001
L4003
L4005
L4006
L4009
L1001
B602
B501
B503
B505
Q1011
Q1003
Q1009
Q1005
Q1013
Q603
Q602
Q604
Q605
Q606
Q4006
Q4005
Q4002
Q4001
Q804
Q805
Q806
Q801
Q405
Q406
Q503
Q507
Q510
Q511
D801
D802
D803
L801
D1002
D608
D1001
D1004
D1013
D2201
D1014
D1015
D1018
D1021
D1053
D1058
D1003_1
D1056
D1051
D1002
D1004
D1021
D1058
D1053
D1003_1
D1056
D1051
D1002
D608
D1001
D1004
D1013
D2201
D1014
D1015
D1018
D1021
D1053
D1058

PRINTED CIRCUIT BOARDS
SYSCON/CRT (CHIP MOUNTED PARTS)
SOLDER SIDE



Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM

(SYSCON PCB)

FROM TV POWER

P.CON+5V

GND

W858 NC

ENV_DET COMP H.AMP_SW1 VCR_A_MUTE H.SW Y/C_CS Y/C_DATA Y/C_CLK P.CON+5V

R4044 100K R4045 12K R4047 12K L4006 47uH 0305 KA

W812 R4054 18K R4051 2.7K C4069 0.1 F

L4005 P.CON+5V 47uH 0305

BUFFER Q4012 2SC2412K R4041 1.8K

C4063 6.3V 47 KA C4062 50V 1 KA C4064 0.022 B C4065 50V 1 KA C4066 0.022 B C4067 50V 1 KA

R4043 3.3K C4060 0.01 F

R4039 8.2K R4042 820

C4058 6.3V 47 KA C4059 0.1 F R4038 680K C4061 0.01 F

X4001 100CTR802 3.579545MHz W818

BUFFER Q4010 2SA1037AK R4033 2.2K

R4034 82K R4035 100K

C4048 16V 10 KA C4052 50V 4.7 KA C4049 16V 10 KA R4062 3.3M C4053 50V 4.7 KA C4057 1 F C4054 0.1 F C4047 16V 10 KA

C4050 0.22 B R4060 1.5M C4051 6.3V 33 KA R4032 100 1/4W

R4048 68 1/4W C4041 0.1 F C4042 6.3V 100 KA L4009 100uH 0305 P.CON+5V

R1025 100 W885 W888

BUFFER Q4009 2SA1037AK

R4008 2.2M C4046 50V 3.3 KA C4044 0.1 F C4045 6.3V 220 KA

R4028 47K 1/4W R4026 39K C4043 0.1 F SD_SYNC

SYNC IN Q4007 2SC2412K R4029 47K 1/4W

C4016 0.068 B C4019 0.047 F C4015 0.047 F

L4001 22uH 0305 P.CON+5V C4055 0.1 F C4009 16V 47 KA

R4064 6.8K R4012 820

R4007 39K 1/4W R4052 8.2K C4020 0.1 F

R4004 15 1/4W P.CON+5V

R4006 47K 1/4W R4053 6.8K C4023 6.3V 22 KA C4012 6.3V 22 KA C4021 0.1 F D4002 MTZJ13B

FRONT_AUDIO

TU_AUDIO

Y/C AUDIO/HEAD AMP IC IC4001 LA71206M-MPB

W829

C4028 0.1 F R4055 1K C4074 0.01 F C4027 6.3V 33 KA R4017 6.8K R4018 5.6K C4025 6.3V 220 YK C4031 50V 3.3 KA R4019 330K C4029_1 0.015 B C4032 0.0033 B R4022 470 R4021 27K C4033 820P B C4034 25V 4.7 KA R4023 68K R4024 6.8K C4035 50V 1 KA C4036 390P B R4025 1.5K C4037 0.1 F C4038 180P CH

NC4004 V.ENV TP4001

C4076 0.1 F C4014 0.047 B W882 W873

R4057 2.7K R4065 4.7M C4039 16V 10 KA R4020 120 R4058 5.6K C4075 100P CH R4059 10M R4061 10M R4037 390

BUFFER Q4011 2SC2412K

L4003 100uH 0305 BIAS CTL Q4005 KTA1266 R4011 22K C4010 6.3V 47 KA

COIL,BIAS OSC T4001 1626009 BIAS OSC Q4006 KTC3203_Y C4005 0.01 F R4010 3.3K C4006 0.015 B R4015 2.2 C4004 6.3V 220 KA

R4001 560 AUDIO PB SW Q4001 KTC3198 R4002 10K AUDIO PB SW Q4002 KTC3198 R4003 10K C4002_1 100V 0.022 MMTS

SW Q4003 KRA103SRTK V.REC_ST_H

CTL+ CTL-

C4022 0.1 F R4022 470 C4021 0.1 F

C4001 0.1 F C4002 0.1 F C4003 0.1 F C4004 0.1 F C4005 0.1 F C4006 0.1 F C4007 0.1 F C4008 0.1 F C4009 0.1 F C4010 0.1 F C4011 0.1 F C4012 0.1 F C4013 0.1 F C4014 0.1 F C4015 0.1 F C4016 0.1 F C4017 0.1 F C4018 0.1 F C4019 0.1 F C4020 0.1 F C4021 0.1 F C4022 0.1 F C4023 0.1 F C4024 0.1 F C4025 0.1 F C4026 0.1 F C4027 0.1 F C4028 0.1 F C4029 0.1 F C4030 0.1 F C4031 0.1 F C4032 0.1 F C4033 0.1 F C4034 0.1 F C4035 0.1 F C4036 0.1 F C4037 0.1 F C4038 0.1 F C4039 0.1 F C4040 0.1 F C4041 0.1 F C4042 0.1 F C4043 0.1 F C4044 0.1 F C4045 0.1 F C4046 0.1 F C4047 0.1 F C4048 0.1 F C4049 0.1 F C4050 0.1 F C4051 0.1 F C4052 0.1 F C4053 0.1 F C4054 0.1 F C4055 0.1 F C4056 0.1 F C4057 0.1 F C4058 0.1 F C4059 0.1 F C4060 0.1 F C4061 0.1 F C4062 0.1 F C4063 0.1 F C4064 0.1 F C4065 0.1 F C4066 0.1 F C4067 0.1 F C4068 0.1 F C4069 0.1 F C4070 0.1 F C4071 0.1 F C4072 0.1 F C4073 0.1 F C4074 0.1 F C4075 0.1 F C4076 0.1 F

R4001 R4002 R4003 R4004 R4005 R4006 R4007 R4008 R4009 R4010 R4011 R4012 R4013 R4014 R4015 R4016 R4017 R4018 R4019 R4020 R4021 R4022 R4023 R4024 R4025 R4026 R4027 R4028 R4029 R4030 R4031 R4032 R4033 R4034 R4035 R4036 R4037 R4038 R4039 R4040 R4041 R4042 R4043 R4044 R4045 R4046 R4047 R4048 R4049 R4050 R4051 R4052 R4053 R4054 R4055 R4056 R4057 R4058 R4059 R4060 R4061 R4062 R4063 R4064 R4065 R4066 R4067 R4068 R4069 R4070 R4071 R4072 R4073 R4074 R4075 R4076 R4077 R4078 R4079 R4080 R4081 R4082 R4083 R4084 R4085 R4086 R4087 R4088 R4089 R4090 R4091 R4092 R4093 R4094 R4095 R4096 R4097 R4098 R4099 R4100 R4101 R4102 R4103 R4104 R4105 R4106 R4107 R4108 R4109 R4110 R4111 R4112 R4113 R4114 R4115 R4116 R4117 R4118 R4119 R4120 R4121 R4122 R4123 R4124 R4125 R4126 R4127 R4128 R4129 R4130 R4131 R4132 R4133 R4134 R4135 R4136 R4137 R4138 R4139 R4140 R4141 R4142 R4143 R4144 R4145 R4146 R4147 R4148 R4149 R4150 R4151 R4152 R4153 R4154 R4155 R4156 R4157 R4158 R4159 R4160 R4161 R4162 R4163 R4164 R4165 R4166 R4167 R4168 R4169 R4170 R4171 R4172 R4173 R4174 R4175 R4176 R4177 R4178 R4179 R4180 R4181 R4182 R4183 R4184 R4185 R4186 R4187 R4188 R4189 R4190 R4191 R4192 R4193 R4194 R4195 R4196 R4197 R4198 R4199 R4200 R4201 R4202 R4203 R4204 R4205 R4206 R4207 R4208 R4209 R4210 R4211 R4212 R4213 R4214 R4215 R4216 R4217 R4218 R4219 R4220 R4221 R4222 R4223 R4224 R4225 R4226 R4227 R4228 R4229 R4230 R4231 R4232 R4233 R4234 R4235 R4236 R4237 R4238 R4239 R4240 R4241 R4242 R4243 R4244 R4245 R4246 R4247 R4248 R4249 R4250 R4251 R4252 R4253 R4254 R4255 R4256 R4257 R4258 R4259 R4260 R4261 R4262 R4263 R4264 R4265 R4266 R4267 R4268 R4269 R4270 R4271 R4272 R4273 R4274 R4275 R4276 R4277 R4278 R4279 R4280 R4281 R4282 R4283 R4284 R4285 R4286 R4287 R4288 R4289 R4290 R4291 R4292 R4293 R4294 R4295 R4296 R4297 R4298 R4299 R4300 R4301 R4302 R4303 R4304 R4305 R4306 R4307 R4308 R4309 R4310 R4311 R4312 R4313 R4314 R4315 R4316 R4317 R4318 R4319 R4320 R4321 R4322 R4323 R4324 R4325 R4326 R4327 R4328 R4329 R4330 R4331 R4332 R4333 R4334 R4335 R4336 R4337 R4338 R4339 R4340 R4341 R4342 R4343 R4344 R4345 R4346 R4347 R4348 R4349 R4350 R4351 R4352 R4353 R4354 R4355 R4356 R4357 R4358 R4359 R4360 R4361 R4362 R4363 R4364 R4365 R4366 R4367 R4368 R4369 R4370 R4371 R4372 R4373 R4374 R4375 R4376 R4377 R4378 R4379 R4380 R4381 R4382 R4383 R4384 R4385 R4386 R4387 R4388 R4389 R4390 R4391 R4392 R4393 R4394 R4395 R4396 R4397 R4398 R4399 R4400 R4401 R4402 R4403 R4404 R4405 R4406 R4407 R4408 R4409 R4410 R4411 R4412 R4413 R4414 R4415 R4416 R4417 R4418 R4419 R4420 R4421 R4422 R4423 R4424 R4425 R4426 R4427 R4428 R4429 R4430 R4431 R4432 R4433 R4434 R4435 R4436 R4437 R4438 R4439 R4440 R4441 R4442 R4443 R4444 R4445 R4446 R4447 R4448 R4449 R4450 R4451 R4452 R4453 R4454 R4455 R4456 R4457 R4458 R4459 R4460 R4461 R4462 R4463 R4464 R4465 R4466 R4467 R4468 R4469 R4470 R4471 R4472 R4473 R4474 R4475 R4476 R4477 R4478 R4479 R4480 R4481 R4482 R4483 R4484 R4485 R4486 R4487 R4488 R4489 R4490 R4491 R4492 R4493 R4494 R4495 R4496 R4497 R4498 R4499 R4500 R4501 R4502 R4503 R4504 R4505 R4506 R4507 R4508 R4509 R4510 R4511 R4512 R4513 R4514 R4515 R4516 R4517 R4518 R4519 R4520 R4521 R4522 R4523 R4524 R4525 R4526 R4527 R4528 R4529 R4530 R4531 R4532 R4533 R4534 R4535 R4536 R4537 R4538 R4539 R4540 R4541 R4542 R4543 R4544 R4545 R4546 R4547 R4548 R4549 R4550 R4551 R4552 R4553 R4554 R4555 R4556 R4557 R4558 R4559 R4560 R4561 R4562 R4563 R4564 R4565 R4566 R4567 R4568 R4569 R4570 R4571 R4572 R4573 R4574 R4575 R4576 R4577 R4578 R4579 R4580 R4581 R4582 R4583 R4584 R4585 R4586 R4587 R4588 R4589 R4590 R4591 R4592 R4593 R4594 R4595 R4596 R4597 R4598 R4599 R4600 R4601 R4602 R4603 R4604 R4605 R4606 R4607 R4608 R4609 R4610 R4611 R4612 R4613 R4614 R4615 R4616 R4617 R4618 R4619 R4620 R4621 R4622 R4623 R4624 R4625 R4626 R4627 R4628 R4629 R4630 R4631 R4632 R4633 R4634 R4635 R4636 R4637 R4638 R4639 R4640 R4641 R4642 R4643 R4644 R4645 R4646 R4647 R4648 R4649 R4650 R4651 R4652 R4653 R4654 R4655 R4656 R4657 R4658 R4659 R4660 R4661 R4662 R4663 R4664 R4665 R4666 R4667 R4668 R4669 R4670 R4671 R4672 R4673 R4674 R4675 R4676 R4677 R4678 R4679 R4680 R4681 R4682 R4683 R4684 R4685 R4686 R4687 R4688 R4689 R4690 R4691 R4692 R4693 R4694 R4695 R4696 R4697 R4698 R4699 R4700 R4701 R4702 R4703 R4704 R4705 R4706 R4707 R4708 R4709 R4710 R4711 R4712 R4713 R4714 R4715 R4716 R4717 R4718 R4719 R4720 R4721 R4722 R4723 R4724 R4725 R4726 R4727 R4728 R4729 R4730 R4731 R4732 R4733 R4734 R4735 R4736 R4737 R4738 R4739 R4740 R4741 R4742 R4743 R4744 R4745 R4746 R4747 R4748 R4749 R4750 R4751 R4752 R4753 R4754 R4755 R4756 R4757 R4758 R4759 R4760 R4761 R4762 R4763 R4764 R4765 R4766 R4767 R4768 R4769 R4770 R4771 R4772 R4773 R4774 R4775 R4776 R4777 R4778 R4779 R4780 R4781 R4782 R4783 R4784 R4785 R4786 R4787 R4788 R4789 R4790 R4791 R4792 R4793 R4794 R4795 R4796 R4797 R4798 R4799 R4800 R4801 R4802 R4803 R4804 R4805 R4806 R4807 R4808 R4809 R4810 R4811 R4812 R4813 R4814 R4815 R4816 R4817 R4818 R4819 R4820 R4821 R4822 R4823 R4824 R4825 R4826 R4827 R4828 R4829 R4830 R4831 R4832 R4833 R4834 R4835 R4836 R4837 R4838 R4839 R4840 R4841 R4842 R4843 R4844 R4845 R4846 R4847 R4848 R4849 R4850 R4851 R4852 R4853 R4854 R4855 R4856 R4857 R4858 R4859 R4860 R4861 R4862 R4863 R4864 R4865 R4866 R4867 R4868 R4869 R4870 R4871 R4872 R4873 R4874 R4875 R4876 R4877 R4878 R4879 R4880 R4881 R4882 R4883 R4884 R4885 R4886 R4887 R4888 R4889 R4890 R4891 R4892 R4893 R4894 R4895 R4896 R4897 R4898 R4899 R4900 R4901 R4902 R4903 R4904 R4905 R4906 R4907 R4908 R4909 R4910 R4911 R4912 R4913 R4914 R4915 R4916 R4917 R4918 R4919 R4920 R4921 R4922 R4923 R4924 R4925 R4926 R4927 R4928 R4929 R4930 R4931 R4932 R4933 R4934 R4935 R4936 R4937 R4938 R4939 R4940 R4941 R4942 R4943 R4944 R4945 R4946 R4947 R4948 R4949 R4950 R4951 R4952 R4953 R4954 R4955 R4956 R4957 R4958 R4959 R4960 R4961 R4962 R4963 R4964 R4965 R4966 R4967 R4968 R4969 R4970 R4971 R4972 R4973 R4974 R4975 R4976 R4977 R4978 R4979 R4980 R4981 R4982 R4983 R4984 R4985 R4986 R4987 R4988 R4989 R4990 R4991 R4992 R4993 R4994 R4995 R4996 R4997 R4998 R4999 R5000

FROM/TO IN/OUT

FRONT_AUDIO
FRONT_VIDEO
Y/C_AUDIO
Y/C_VIDEO

FROM/TO MICON

Y/C_CLK
Y/C_DATA
Y/C_CS
V.REC_ST_H
VCR_A_MUTE
DUMMY_V.SYNC
CTL-
CTL+
H.AMP_SW1
COMP
ENV_DET
H.SW
SD_VIDEO
SD_SYNC

FROM/TO CYL

CP4001_1
TOC-C04X-B1

4	SP-CH1 (R)
3	SP_COM
2	SP-CH2 (L)
1	

FROM/TO HEAD AUDIO CONTROL

CP4002
IMSA-9604S-06Z14

6	AUDIO_REC
5	AUDIO_PB
4	CTL+
3	CTL-
2	AE_HEAD(+)
1	AE_HEAD(-)

TO FULL ERASE HEAD

CP4003
B2013H02-2P

2	GND
1	AE_HEAD(-)

GND
HOT

FROM/TO CHROMA/IF

TU_VIDEO
TU_AUDIO
SD_VIDEO
Y/C_AUDIO
VD

- PLAYBACK LUMINANCE SIGNAL
- PLAYBACK COLOR SIGNAL
- RECORD LUMINANCE SIGNAL
- RECORD COLOR SIGNAL
- PLAYBACK VIDEO SIGNAL
- TUNER VIDEO SIGNAL
- AUDIO SIGNAL(PB)
- AUDIO SIGNAL(REC)
- DEFLECTION SIGNAL

PCB010
VMB281

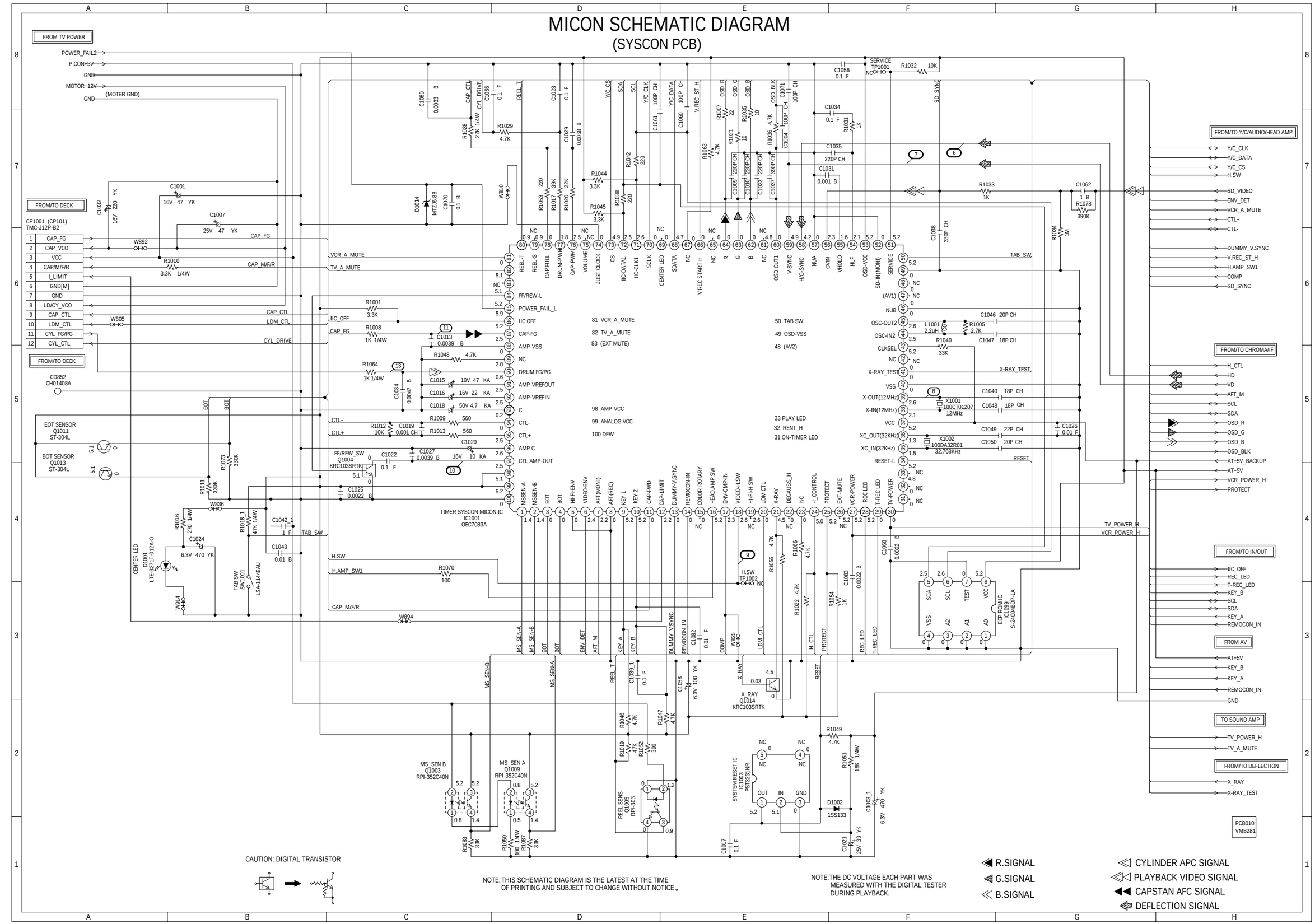
CAUTION: DIGITAL TRANSISTOR

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

MICON SCHEMATIC DIAGRAM

(SYSCON PCB)



IN/OUT SCHEMATIC DIAGRAM

(SYSCON PCB)

TEST POINT

CP351_1
00_8283_061_00

6	5	4	3	2	1
B.OUT	INT-MONI	IIC OFF	SDA	SCL	GND

TEST POINT

CP1003
173979-4

1	2	3	4
Y/C_AUDIO	AT+5V	GND	Y/C_VIDEO

FROM/TO MICON

IIC_OFF
SDA
SCL
REC_LED

REC LED SW(AI)
Q1007
KRC102SRTK

T-REC/PLAY LED SW
Q4202
KRC102SRTK

KEY_B
KEY_A
REMOCON_IN
T-REC_LED

FROM/TO Y/C/AUDIO/HEAD AMP

Y/C_AUDIO
Y/C_VIDEO

FRONT_AUDIO
FRONT_VIDEO

R1086 270
R1084 270

T-REC D1004 SLR-342/VCT32
REC D1013 SLR-342/VCT32

FROM CHROMA/IF

AT+5V
INT-MONI
B.OUT

FROM/TO AV

FRONT_VIDEO
FRONT_AUDIO
KEY_A
KEY_B
REMOCON_IN
AT+5V
GND

FROM/TO TV POWER

GND

PCB010
VMB281

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

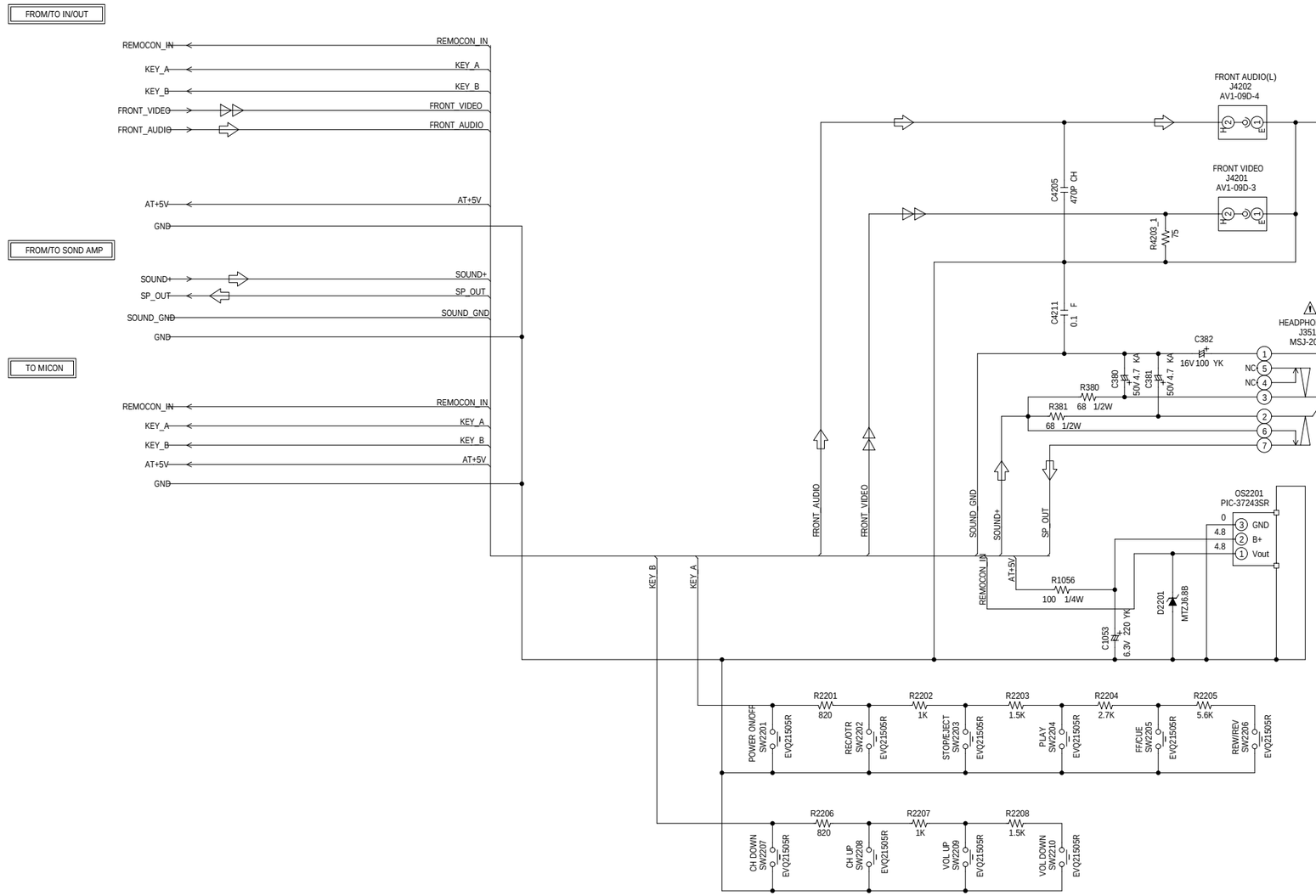
CAUTION: DIGITAL TRANSISTOR

≪ B.SIGNAL
◁◁ TUNER VIDEO SIGNAL
◁ AUDIO SIGNAL(REC)
◀ AUDIO SIGNAL(PB)

⋘ RECORD LUMINANCE SIGNAL
⋘ RECORD COLOR SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL
◁ PLAYBACK COLOR SIGNAL

AV SCHEMATIC DIAGRAM

(AV PCB)



PCB010
VMB281

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

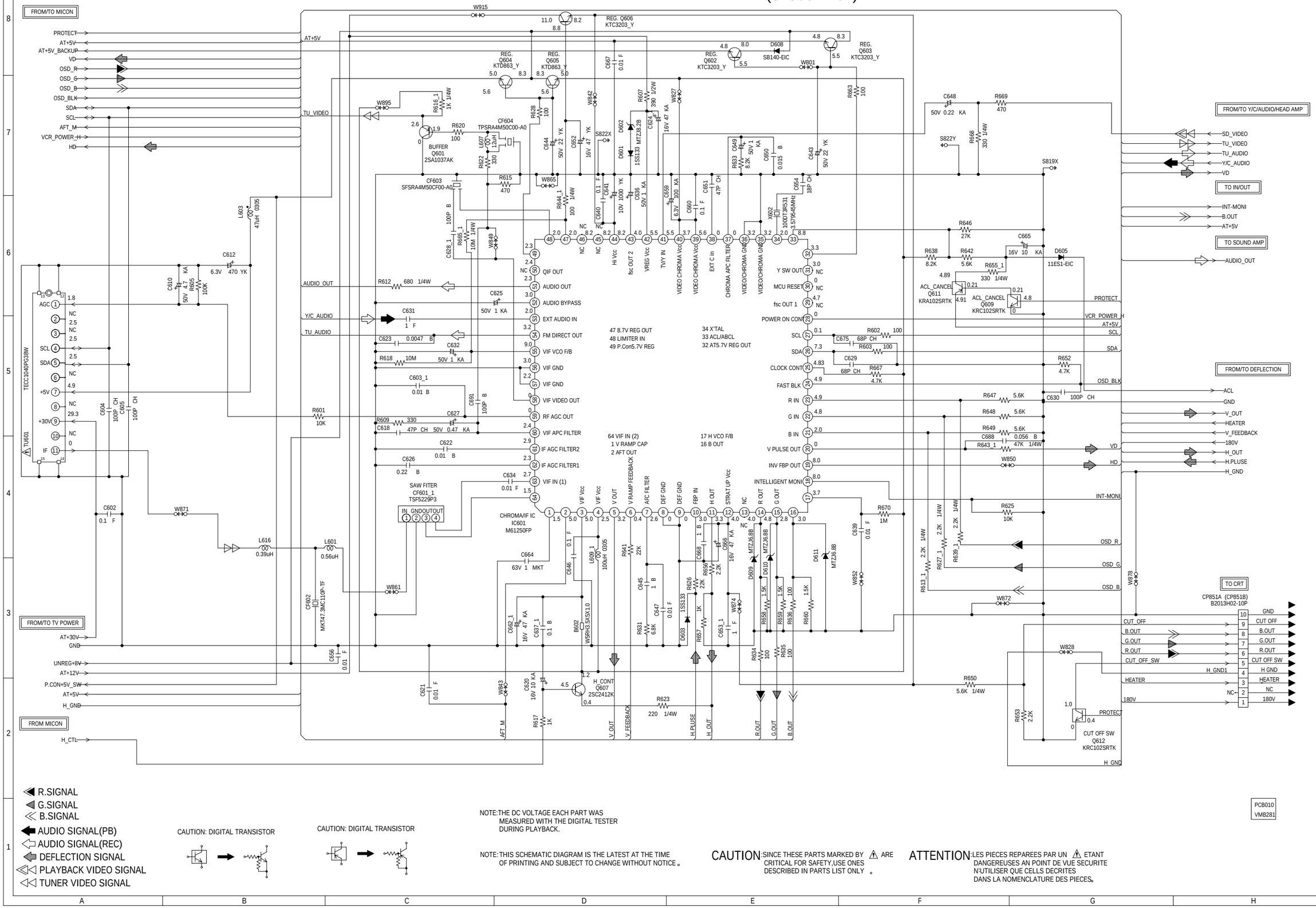
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

◁◁ TUNER VIDEO SIGNAL

◁ AUDIO SIGNAL(REC)

CHROMA/IF SCHEMATIC DIAGRAM (SYSCON PCB)



NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

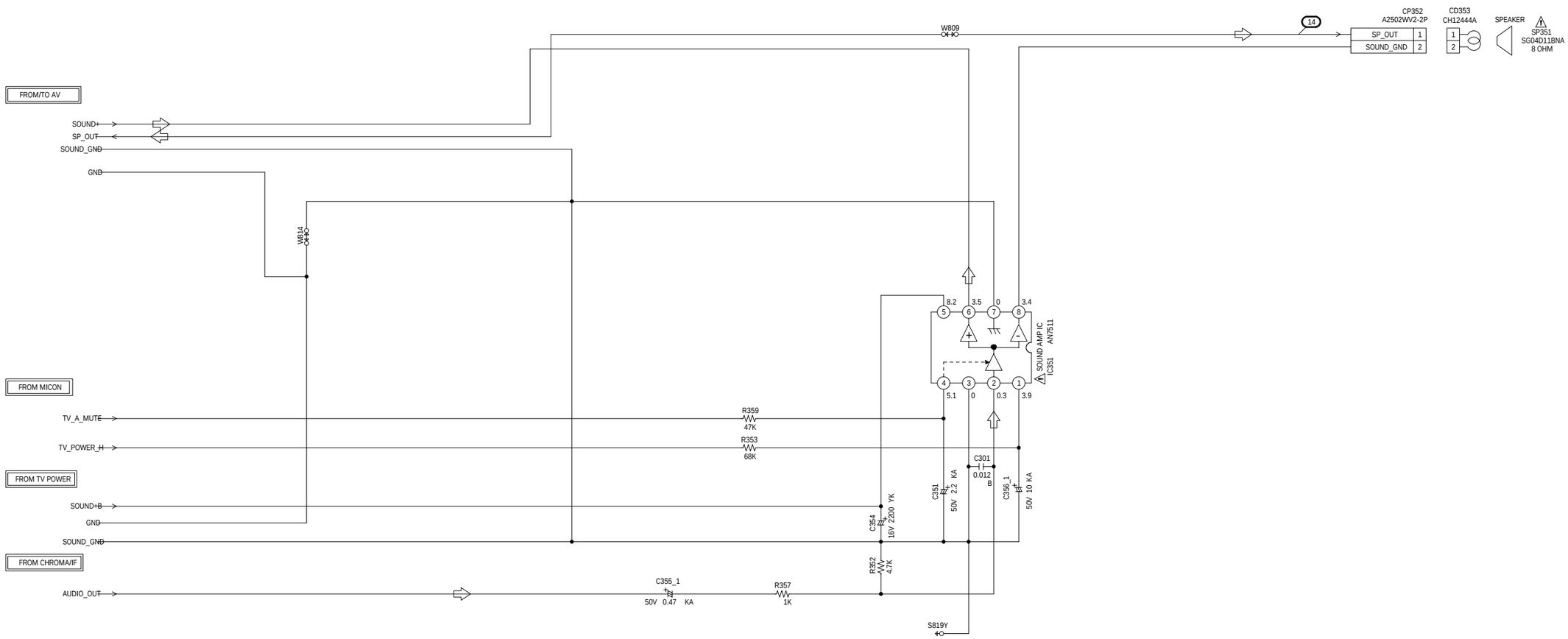
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

SOUND AMP SCHEMATIC DIAGRAM

(SYSCON PCB)



PCB010
VMB281

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

⇦ AUDIO SIGNAL(REC)

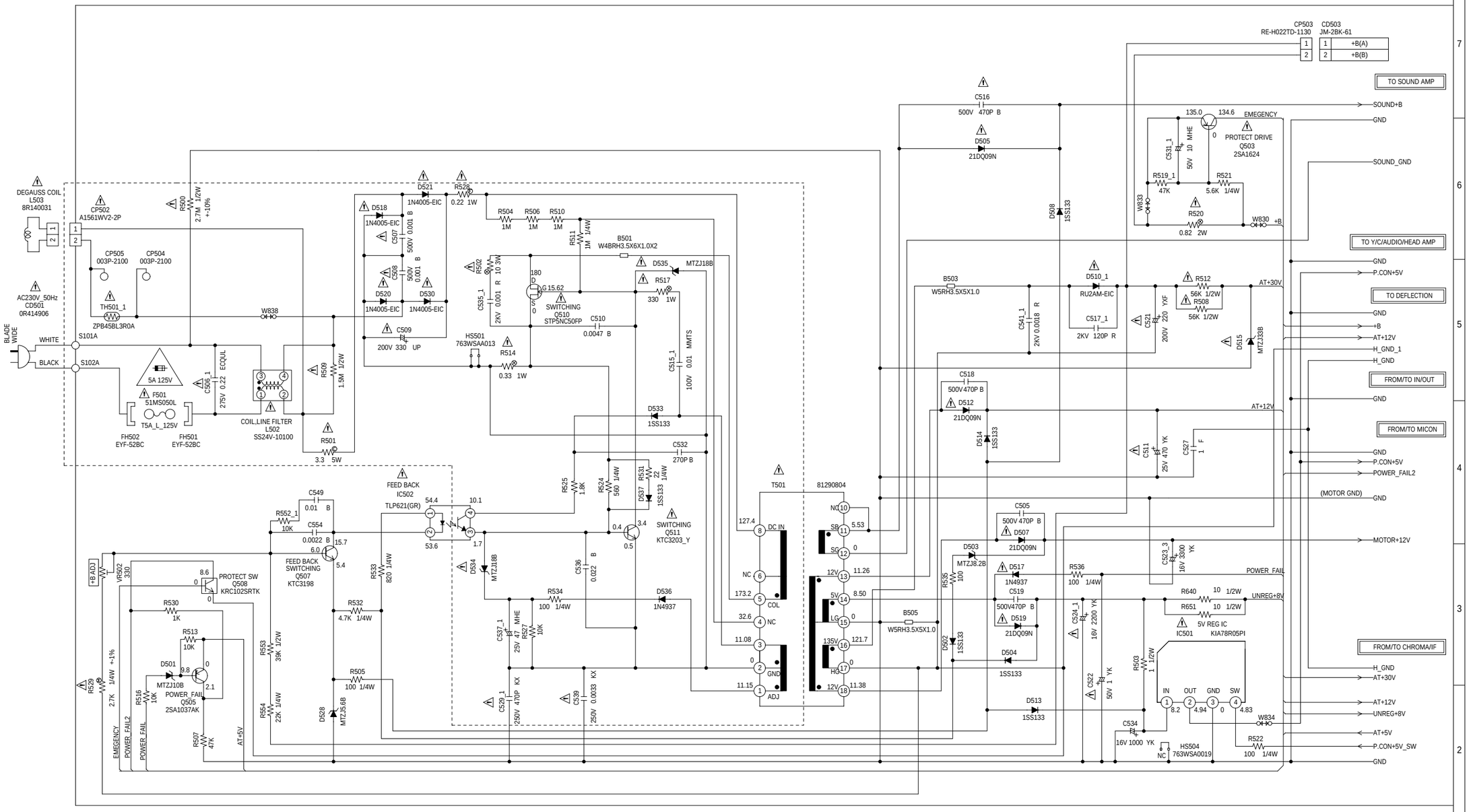
TV POWER SCHEMATIC DIAGRAM

(SYSCON PCB)

5A 125V

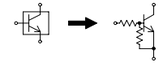
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTOLISER QUE DES FUSIBLE DE MEME TYPE



PCB010
VMB281

CAUTION: DIGITAL TRANSISTOR



NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

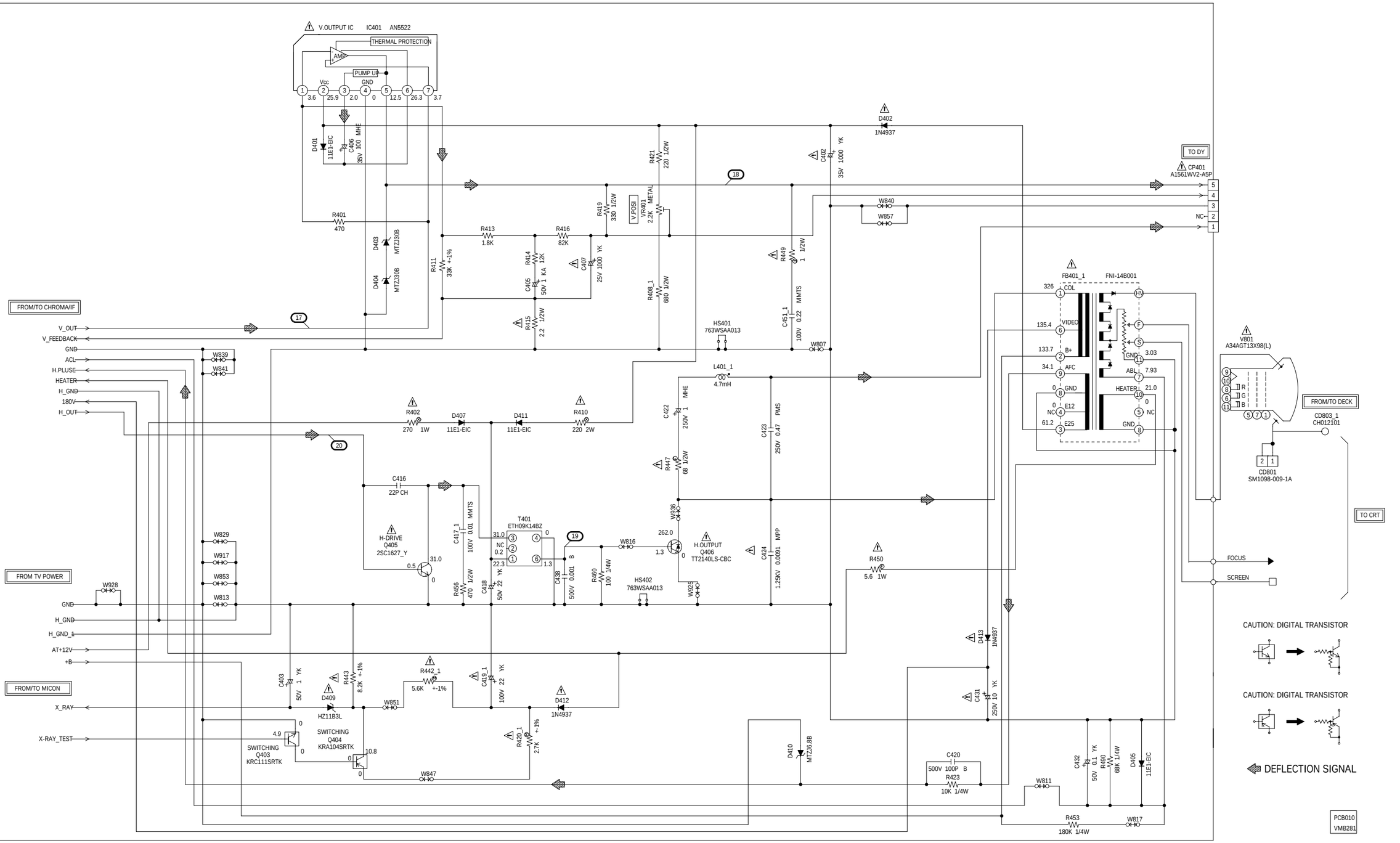
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

DEFLECTION SCHEMATIC DIAGRAM
(SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

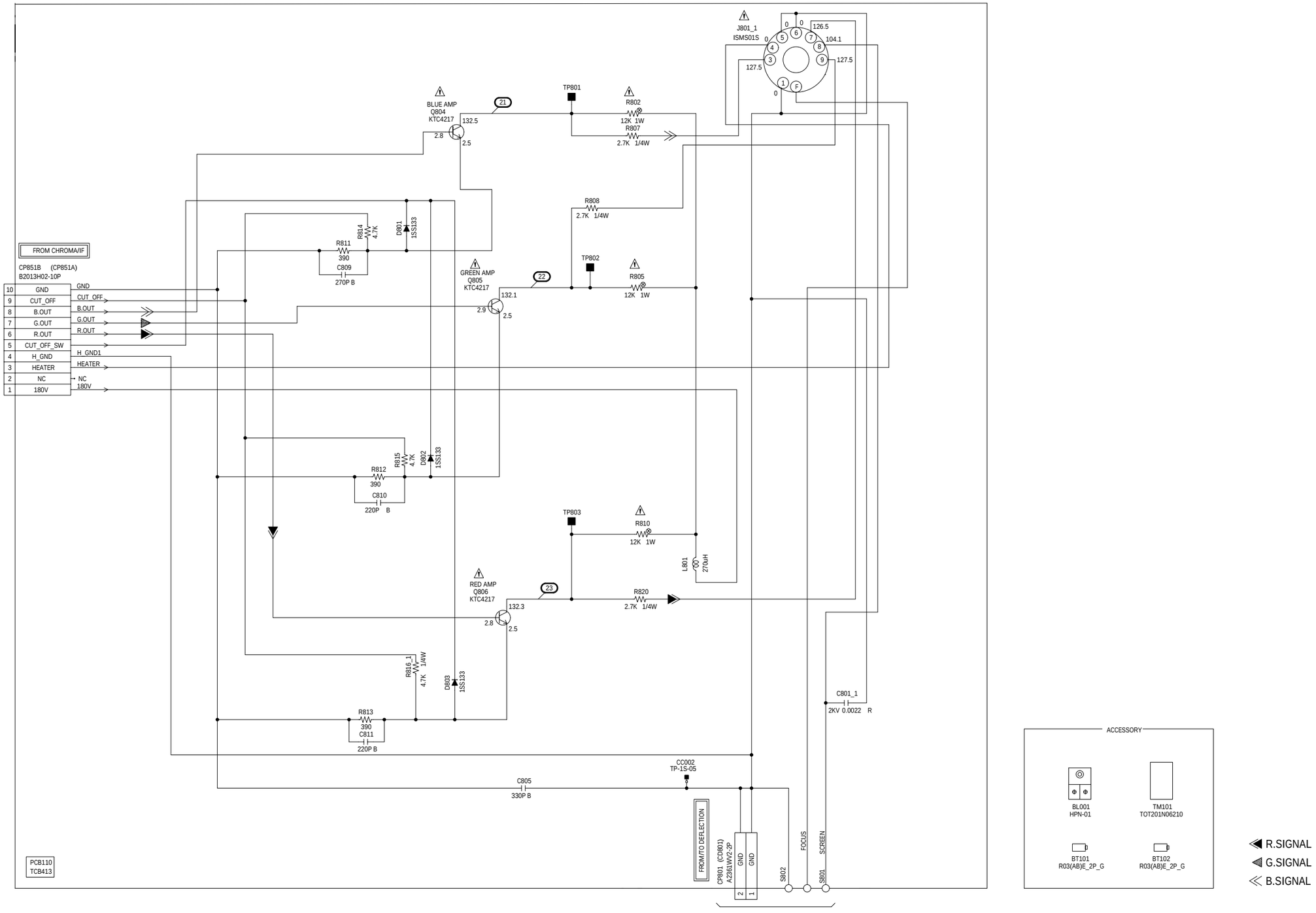
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

CRT SCHEMATIC DIAGRAM

(CRT PCB)



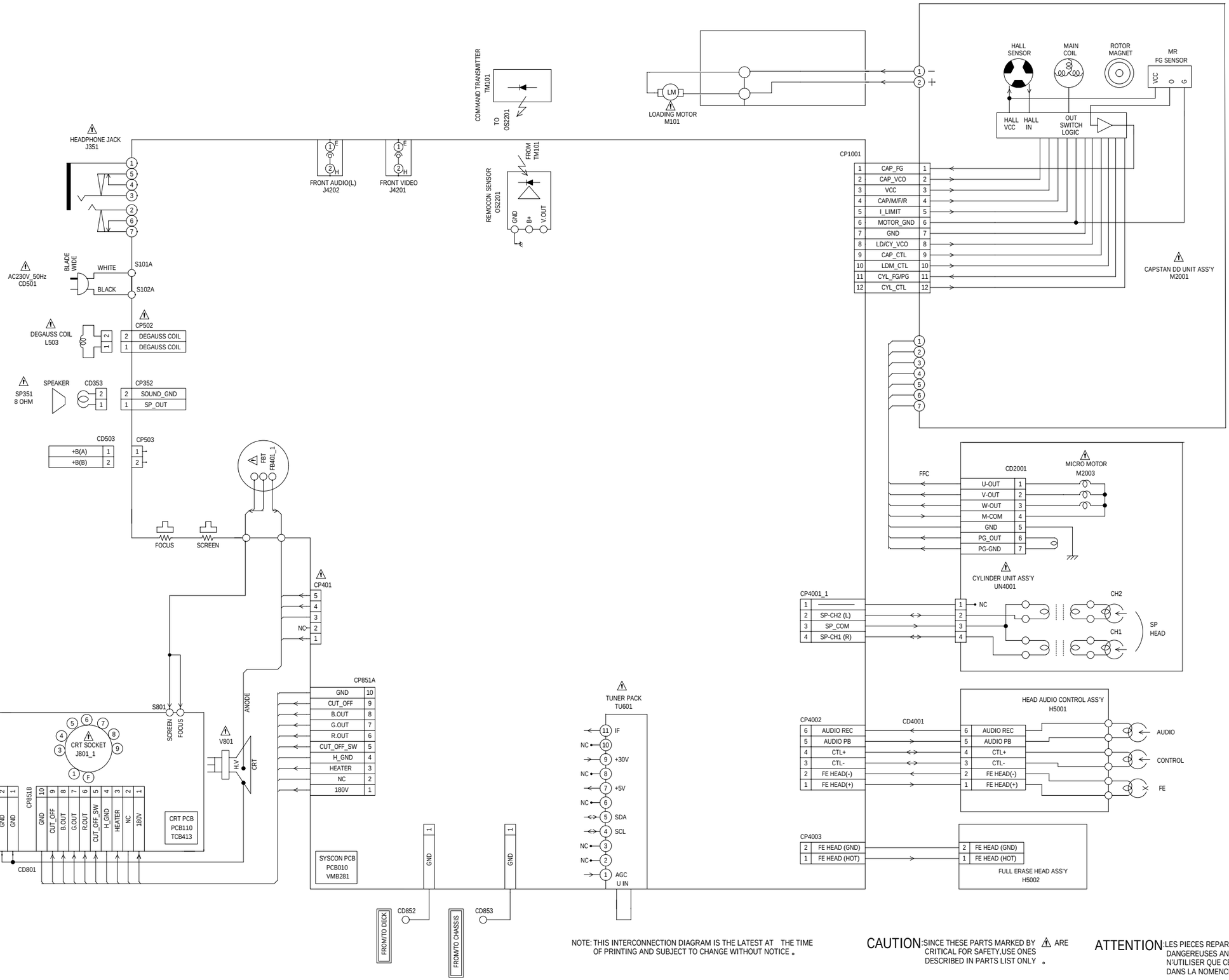
NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION:SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION:LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

INTERCONNECTION DIAGRAM



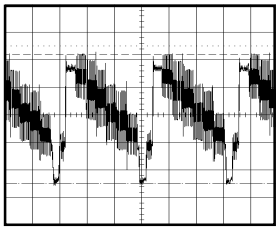
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

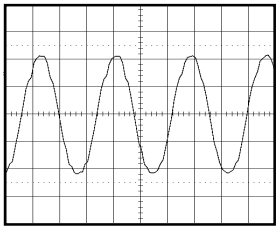
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

WAVEFORMS

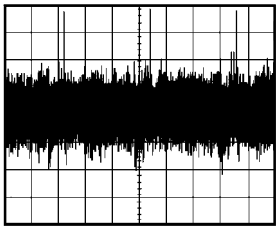
Y/C/AUDIO/HEAD AMP



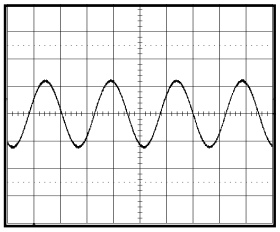
① PB
0.5V 20µs/div



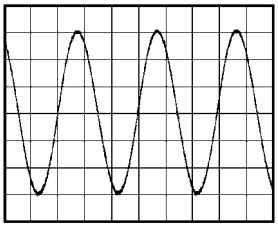
② 100mV 0.1µs/div



③ PB
10mV 20µs/div

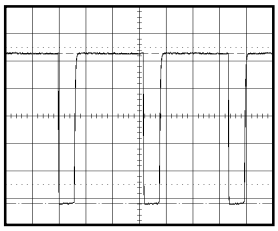


④ PB
0.5V 1ms/div

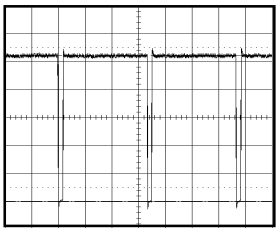


⑤ REC
10.0V 5µs/div

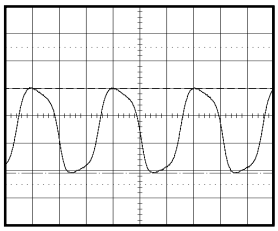
MICON



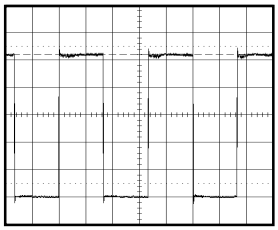
⑥ 1.0V 20µs/div



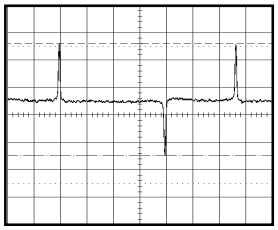
⑦ 0.5V 10ms/div



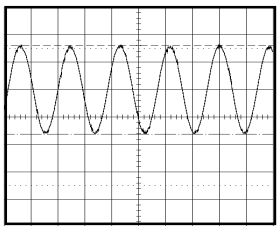
⑧ 1.0V 10µs/div



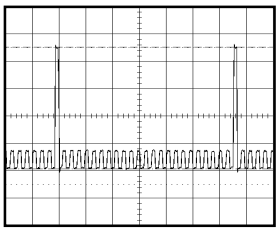
⑨ PB
1.0V 10ms/div



⑩ PB
1.0V 5ms/div

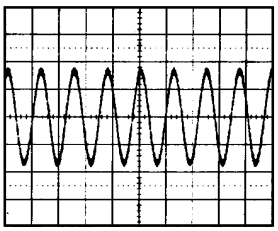


⑪ PB
0.5V 0.5ms/div



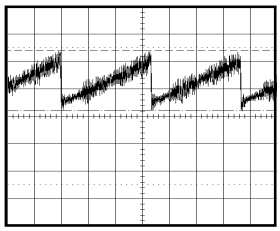
⑬ PB
1.0V 5ms/div

SOUND AMP

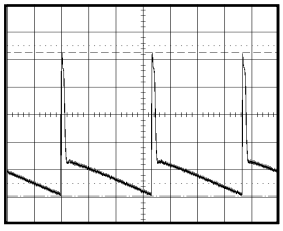


⑭ 200mV 2ms/div

DEFLECTION



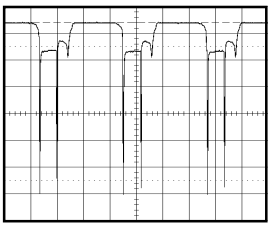
⑰ 0.5V 5ms/div



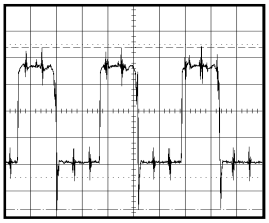
⑱ 10.0V 5ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

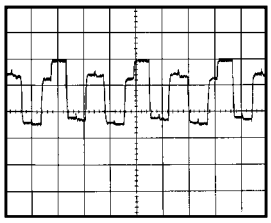


⑲ 2.0V 20µs/div

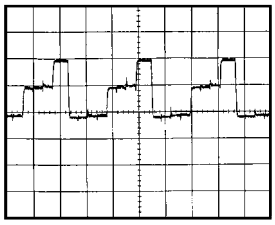


⑳ 200mV 20µs/div

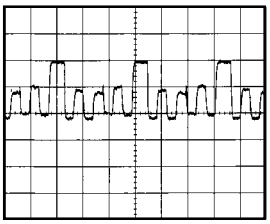
CRT



㉑ 50.0V 20µs/div



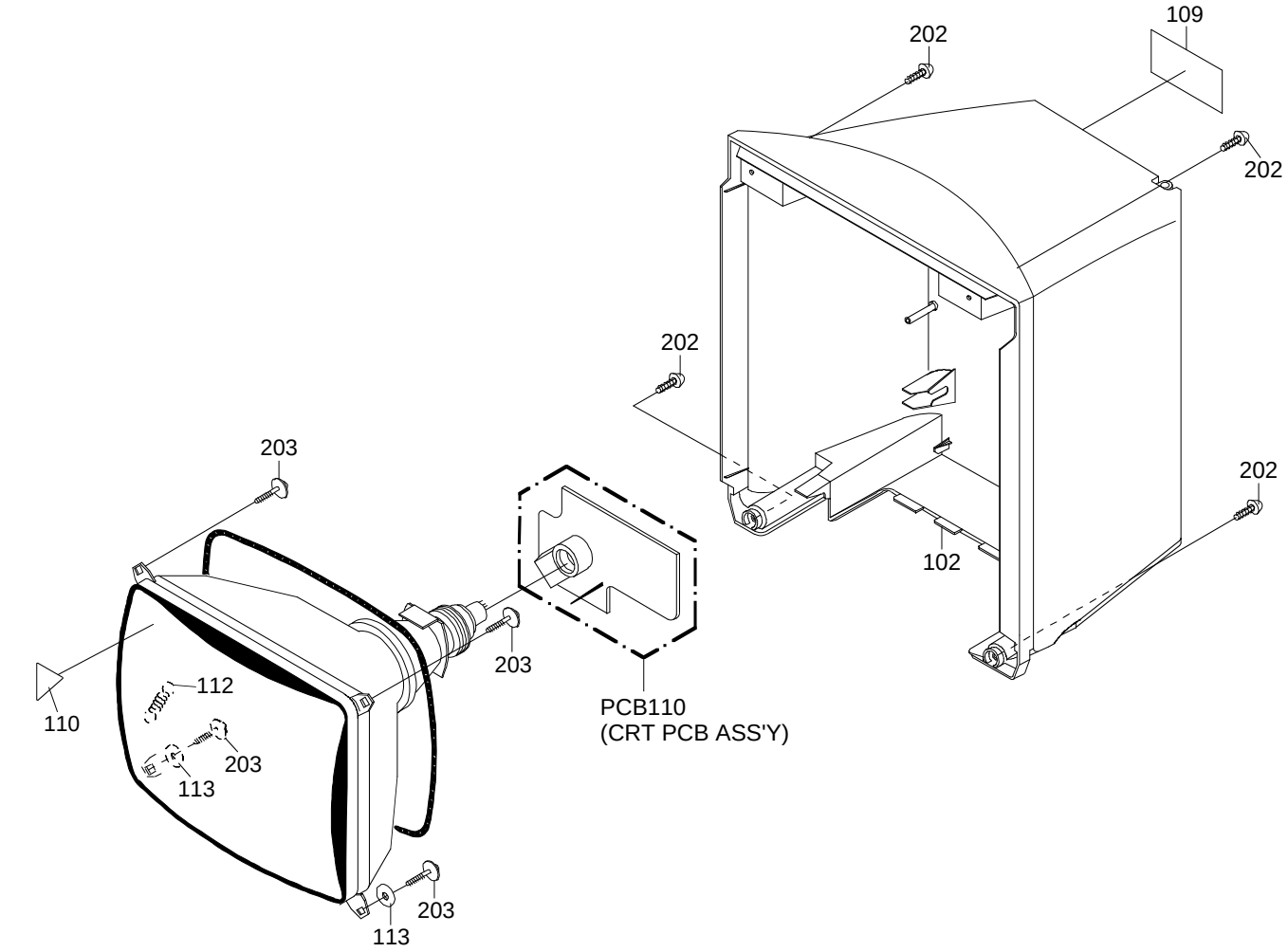
㉒ 50.0V 20µs/div

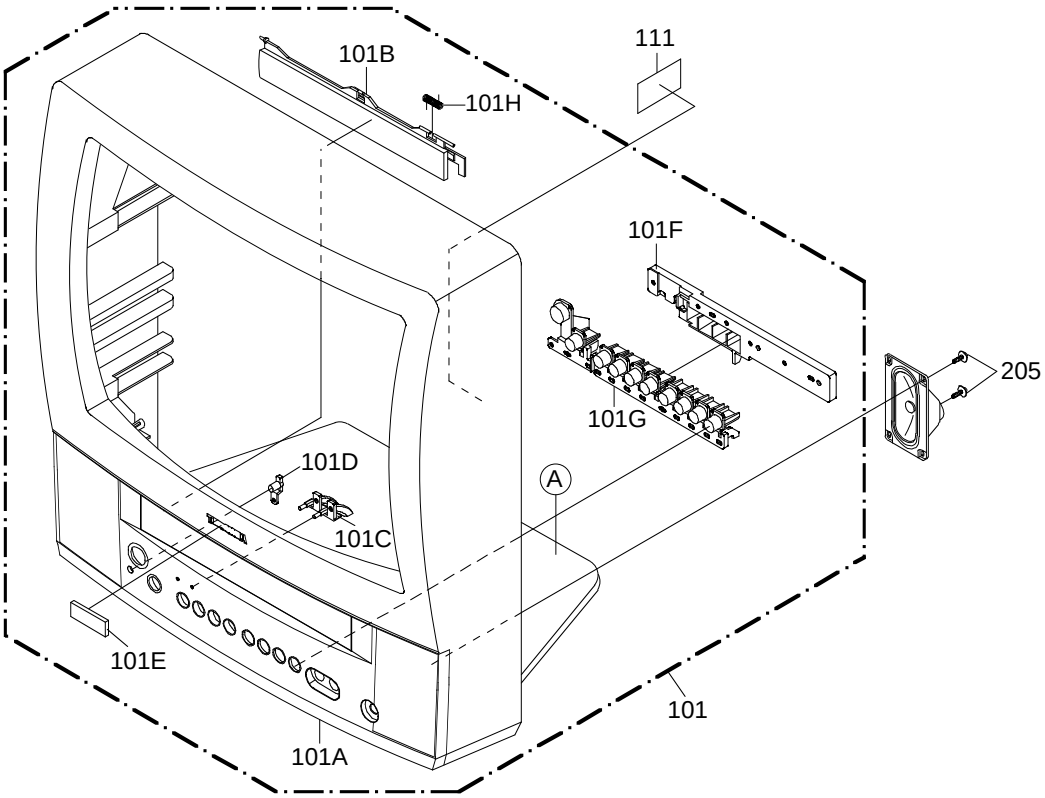


㉓ 50.0V 20µs/div

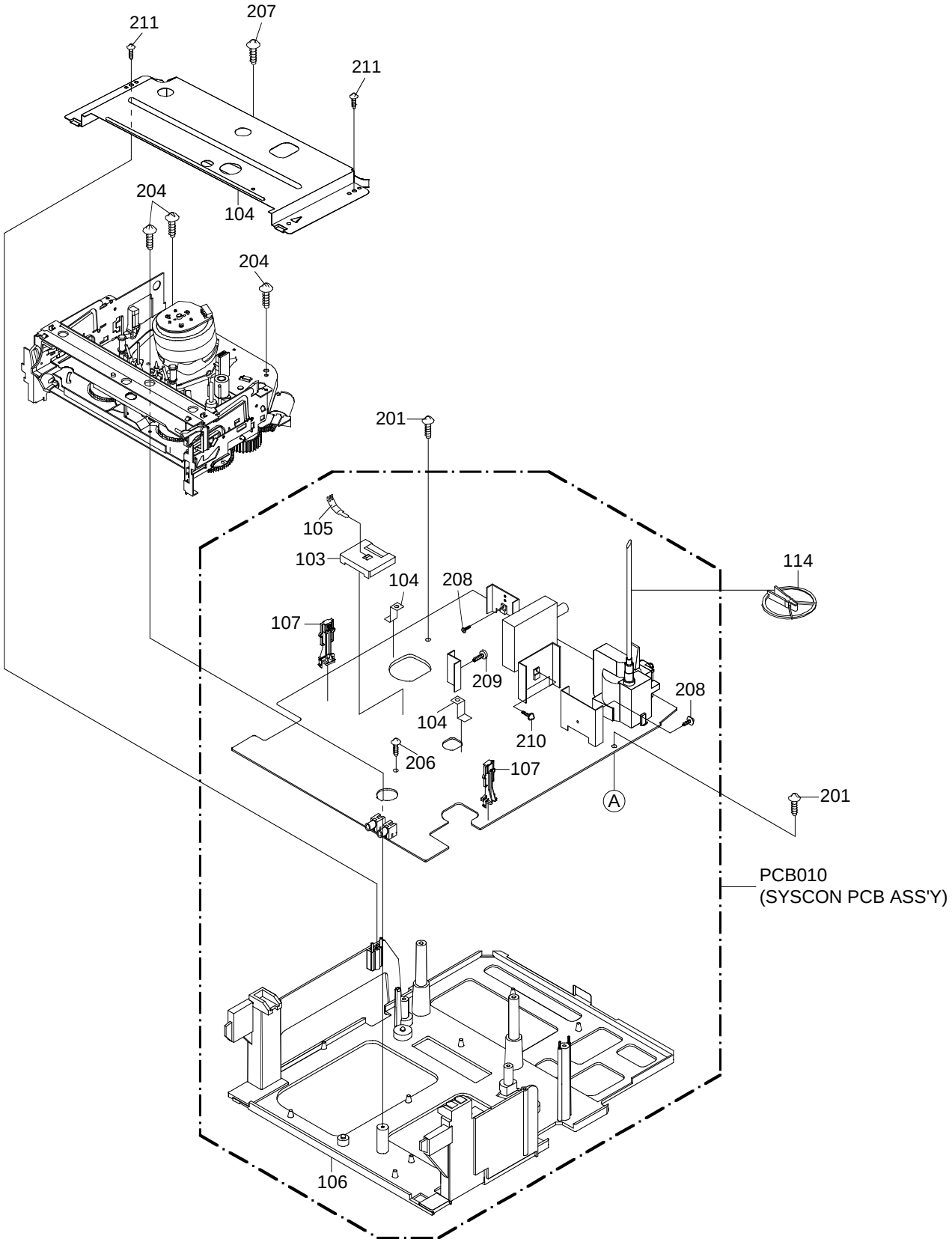
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW

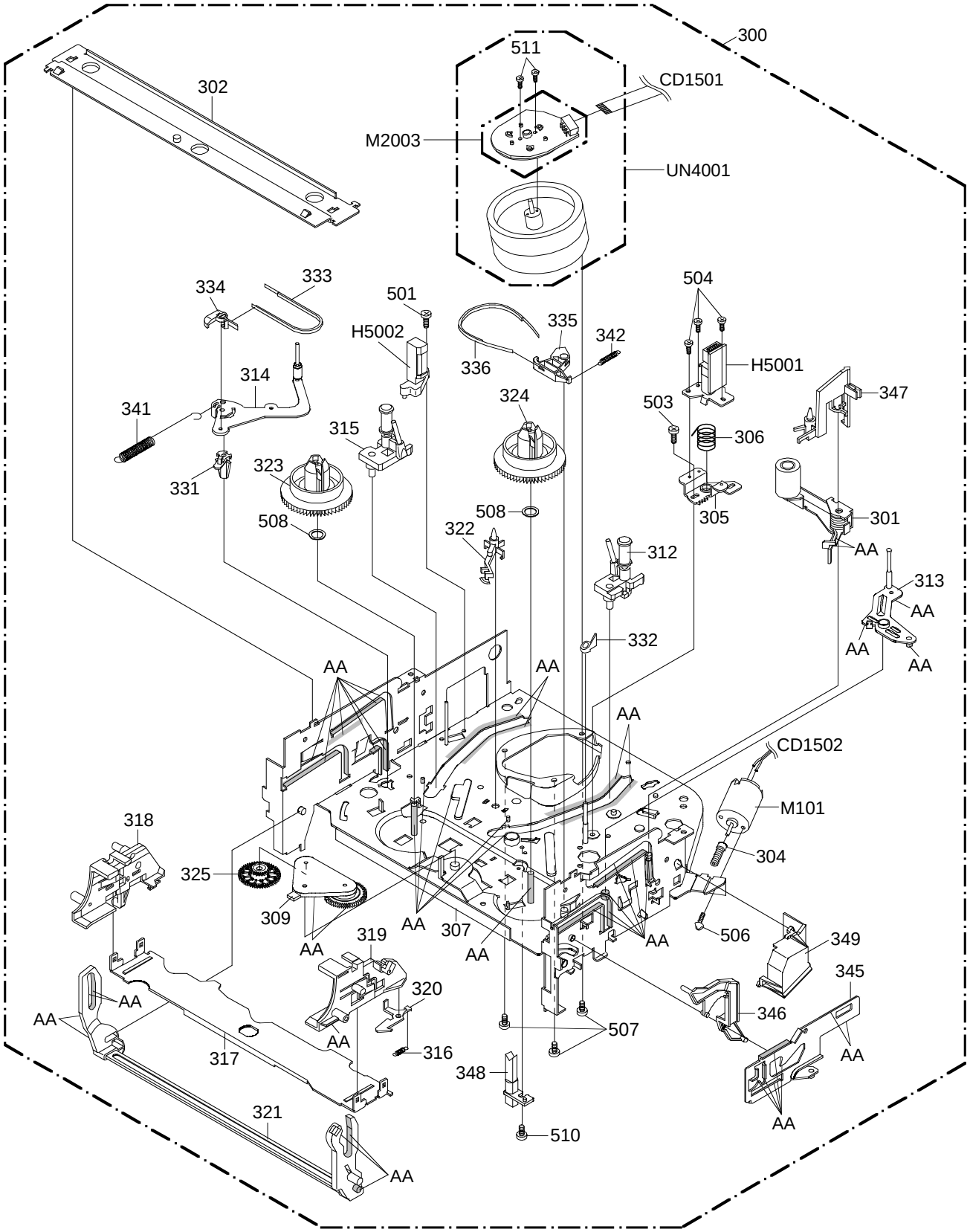




MECHANICAL EXPLODED VIEW



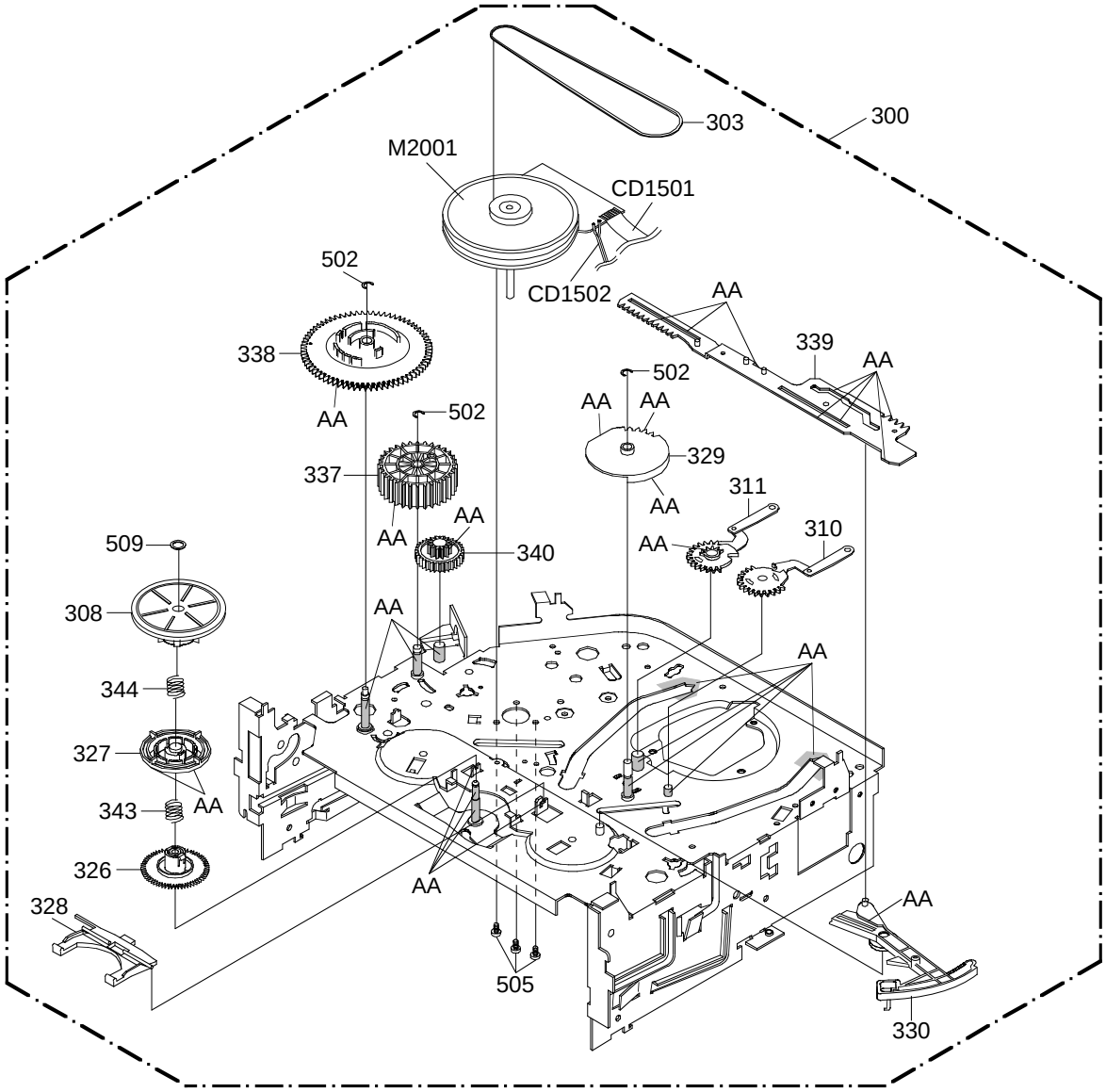
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
101	AE001385	A5E219A720	CABINET,FRONT ASSY		
101A	AE001386	701WPJC351	CABINET,FRONT		
101B	AE001387	712WPJB853	FLAP		
101C	AD301664	713WPA0248	GLASS,LED		
101D	AD301663	713WPA0249	GUIDE,REMOCON		
101E	AD301657	723549A011	BADGE,BRAND		
101F	AD301748	735WPA0710	STOPPER,BUTTON		
101G	AE001388	735WPBA815	BUTTON,FRAME		
101H	AD301686	743WKA0037	SPRING,FLAP		
102	AE001389	A5E219A740	CABINET,BACK ASSY		
103	BZ710466	752WSA0230	SHIELD,CASE HEAD AMP		
104	AE000049	753WSA0118	PLATE,EARTH-SYSCON		
105	BZ710331	753WUAA006	SPRING,EARTH HEAD AMP		
106	AD301656	761WPA0236	HOLDER,DECK		or
	AE001390	761WPAA067	HOLDER,DECK		or
	AE001391	761WPAA077	HOLDER,DECK		
107	BZ710498	85OP700038	HOLDER,END SENSOR		
108	AD301750	752WSAA051	PLATE,DECK SHIELD		
109	AE001392	722549A223	SHEET,RATING		
110	AE001393	723000C290	POP LABEL		
111	AD300007	7230006755	SHEET,CAUTION		
112	BZ710009	741WUA0019	SPRING,EARTH		
113	AE000053	800WR0A011	SHEET,CRT SUPPORT (D)		
114	BZ710260	899HV3T000	HOLDER,ANODE WIRE		
201	BZ710036	8117540B04	SCREW,TAPPING(B0) TRUSS	4x20	
202	BZ710035	8117540A64	SCREW,TAPPING(B0) TRUSS	4x16	
203	BZ710321	8121F50B84	SCREW,TAP TITE(P) FAI20 FLAT	5x28	
204	BZ710032	8110630A24	SCREW,TAP TITE(P) BRAZIER	3x12	
205	BZ710030	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8	
206	BZ710028	8110330804	SCREW,TAP TITE(P) FLAT	3x8	
207	AD301667	8110E30804	SCREW,TAP TITE(P) WH10	3x8	
208	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10	
209	BZ710562	8109I30804	SCREW,TAP TITE(B) WH7	3x8	
210	BZ710018	8107630804	SCREW,TAP TITE(S) BRAZIER	3x8	
211	BZ710147	8107630604	SCREW,TAP TITE(S) BRAZIER	3x6	
---	AE001394	723000C289	SHEET,BAR CODE		
---	AD302402	791WHA0061	LAMIFILM BAG		
---	AD301669	792WHA0412	PACKAGE,TOP		
---	AE001366	792WHA0478	PACKAGE,BOTTOM		
---	AE001395	793WCDB843	GIFT BOX		
---	AD301672	A5E201A975	INSTRUCTION BOOK KIT		
---	AD302404	J5500817	REGISTRATION CARD		
---	AE001396	J5500836	ESP CARD		
---	AE001397	J5E20101B	INSTRUCTION BOOK		
---	AE001184	J5F10129A	INFORMATION SHEET		
---	AD300812	JB5UD400	POLYBAG,INSTRUCTION(RED CAUTION)		

CHASSIS REPLACEMENT PARTS LIST

	Location No.	TSB P/N	Reference No.	Description		
	300	AD301674	A5E201A420K	DECK ASS'Y	A5E201A420K	
	301	BZ710564	85OA400234	PINCH ROLLER BLOCK		
	302	BZ710514	85OP900746	BRACKET,TOP 3V		
	303	BZ710193	85OP200290	BELT,CAPSTAN (S)		
	304	BZ710515	85OP600581	WORM		
	305	BZ710094	85OP500083	BASE,AC HEAD		
	306	BZ710112	85OP800324	SPRING,AC HEAD		
	307	BZ710516	85OA000459	MAIN CHASSIS ASS'Y		
	308	BZ710517	85OA200089	CLUTCH ASS'Y		
	309	BZ710518	85OA200090	ARM IDLER ASS'Y		
	310	BZ710519	85OA300065	LOADING ARM S UNIT		
	311	BZ710520	85OA300066	LOADING ARM T UNIT		
	312	BZ710521	85OA400223	INCLINED BASE T UINT 3S		
	313	BZ710522	85OA400232	P5 ARM ASS'Y 2		
	314	BZ710650	85OA400235	TENSION ARM ASS'Y 2		
	315	BZ710524	85OA400231	INCLINED BASE S UNIT		
	316	AE000442	85OP800367	SPRING,LOCKER		
	317	BZ710526	85OP900736	CASS,HOLDER		
	318	BZ710527	85OP900748	CASS,SIDE L		
	319	BZ710528	85OP900749	CASS,SIDE R		
	320	BZ710529	85OP900739	LOCKER,R		
	321	BZ710530	85OA900228	LINK UNIT		
	322	BZ710531	85OP000496	POST,CASS GUIDE		
	323	BZ710532	85OP200316	REEL,S (S)		
	324	BZ710533	85OP200317	REEL,T (S)		
	325	BZ710534	85OP200308	GEAR,IDLER		
	326	BZ710535	85OP200311	GEAR,CLUTCH		
	327	BZ710536	85OP200312	GEAR,COUPLING		
	328	BZ710537	85OP200313	LEVER,CLUTCH		
	329	BZ710538	85OP300194	GEAR,MAIN LOADING		
	330	BZ710092	85OP400490	LEVER,TENSION		
	331	BZ710093	85OP400492	HOLDER,TENSION		
	332	BZ710366	85OP400520	CAP.P4		
	333	BZ710762	85OP400542	BAND,TENSION		
	334	BZ710540	85OP400533	CONNECT,TENSION		
	335	BZ710541	85OP600573	ARM,BRAKE T		
	336	BZ710763	85OP600584	BAND,BRAKE T		
	337	BZ710543	85OP600577	CAM,PINCH ROLLER		
	338	BZ710544	85OP600578	CAM,MAIN		
	339	BZ710545	85OP600579	ROD,MAIN		
	340	BZ710546	85OP600582	GEAR,JOINT		
	341	BZ710110	85OP800322	SPRING,TENSION		
	342	BZ710547	85OP800360	SPRING,BRAKE T		
	343	BZ710548	85OP800355	SPRING,COUPLING		
	344	BZ710549	85OP800356	SPRING,RING		
	345	BZ710565	85OP900750	LEVER,LINK 2		
	346	BZ710551	85OP900744	LEVER,FLAP		
	347	BZ710552	85OP900745	CASS,OPENER		
	348	BZ710106	85OP700035	REFLECTOR,LED		
	349	BZ710796	85OP700039	COVER,BOT		
	501	BZ710049	8107226804	SCREW,TAP TITE(S) BIND	2.6x8	
	502	BZ710058	83ETW30000	E-RING	3.0	
	503	BZ710371	8107226404	SCREW,TAP TITE(S) BIND	2.6x4	
	504	BZ710046	8102120604	SCREW,PAN	M2x6	
	505	BZ710050	8109126604	SCREW,TAP TITE(B) PAN	2.6x6	
	506	BZ710553	810A130404	SCREW/WASHER(A)	M3x4	
	507	BZ710219	810A126504	SCREW/WASHER(A)	M2.6x5	
	508	BZ710056	82Q264713N	POLYSLIDER WASHER	2.6x4.7xT0.13	
	509	BZ710054	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5	
	510	BZ710017	8107226604	SCREW,TAP TITE(S) BIND	2.6x6	
	511	BZ710051	810A123504	SEMS A	M2.3x5.0	
	CD1501	BZ614292	122H071704	CORD JUMPER	2H071704	
	CD1502	BZ614339	122Y021902	CORD JUMPER	2Y021902	
	H5001	AD301675	1523Q91003	HEAD (AUDIO CONTROL)	VTR-1X2RPE22-756	
	H5002	AD301676	1543Q02014	HEAD (FULL ERASE)	VTR-1X2ERS11-154	
⚠	M101	BZ710566	1596P98001	MOTOR (LOADING)	MXN13FB12K3	or
		BZ710554	1596S98001	MOTOR (LOADING)	MDB2B66	
⚠	M2001	AD301677	1510S98038	CAPSTAN DD UNIT	F2QVB33	
⚠	M2003	BZ710373	1589S11014	MICRO MOTOR	I2OAL03	
⚠	UN4001	BZ610290	A5A305A500	CYLINDER UNIT ASS'Y	A5A305A500	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			RESISTORS	
⚠R402	BZ210225	R3X181271J	R,METAL OXIDE	270 OHM 1W
⚠R410	AD301140	R3X28A221J	R,METAL OXIDE	220 OHM 2W
⚠R415	BZ210053	R002T22R2J	RC	2.2 OHM 1/2W
⚠R420	BZ210233	R4X5T6272F	R,METAL	2.7K OHM 1/6W
⚠R442	AD300036	R4X5T6562F	R,METAL	5.6K OHM 1/6W
⚠R443	BZ210070	R801R7822F	RC	8.2K OHM 1/10W
⚠R447	BZ210021	R65582680J	R,FUSE	68 OHM 1/2W
⚠R449	BZ210241	R655U2010J	R,FUSE	1 OHM 1/2W
⚠R450	AD301631	R655815R6J	R,FUSE	5.6 OHM 1W
⚠R500	BZ210080	R0G3K2275K	RC	2.7M OHM 1/2W
⚠R501	AD301632	R5Y2CD3R3J	R,CEMENT	3.3 OHM 5W
⚠R502	BZ210215	R3X28B100J	R,METAL OXIDE	10 OHM 3W
⚠R508	BZ210158	R002T2563J	RC	56K OHM 1/2W
⚠R509	BZ210206	R002T2155J	RC	1.5M OHM 1/2W
⚠R510	BZ210216	R801R7105J	RC	1M OHM 1/10W
⚠R512	BZ210158	R002T2563J	RC	56K OHM 1/2W
⚠R514	BZ210048	R3X181R33J	R,METAL OXIDE	0.33 OHM 1W
⚠R517	BZ210217	R3X181331J	R,METAL OXIDE	330 OHM 1W
⚠R520	BZ210009	R3X28AR82J	R,METAL OXIDE	0.82 OHM 2W
⚠R528	BZ210190	R63581R22J	R,FUSE	0.22 OHM 1W
⚠R529	BZ210084	R4X5T4272F	R,METAL	2.7K OHM 1/4W
⚠R802	BZ210089	R3X181123J	R,METAL OXIDE	12K OHM 1W
⚠R805	BZ210089	R3X181123J	R,METAL OXIDE	12K OHM 1W
⚠R810	BZ210089	R3X181123J	R,METAL OXIDE	12K OHM 1W
			CAPACITORS	
C354	BZ110135	E02L02222M	CE	2200 UF 16V
⚠C402	BZ110077	E02L04102M	CE	1000 UF 35V
⚠C407	BZ110078	E02L03102M	CE	1000 UF 25V
⚠C419	AD300064	E02LT8220M	CE	22 UF 100V
C423	BZ210173	P4J7F3474J	CMPP	0.47 UF 250V PMS
⚠C424	AD302292	P4N8FJ912H	CMPP	0.0091UF 1.25KV
⚠C431	BZ110103	E02LTD100M	CE	10 UF 250V
⚠C506	BZ110025	P2122B224M	CMP	0.22 UF 275V ECQUL
⚠C507	BZ110061	C0JTB0513K	CC	0.001 UF 500V B
⚠C509	AD301635	E51CGC331M	CE	330 UF 200V
⚠C511	BZ110041	E02LT3471M	CE	470 UF 25V
⚠C516	BZ110206	C0JTB05Q2K	CC	470 PF 500V B
C517	AD301636	C0PLRR7B2K	CC	120 PF 2KV R
⚠C521	BZ110130	E62NFC221M	CE	220 UF 200V
⚠C522	AD300788	E02LU5010M	CE	1 UF 50V
C523	BZ110104	E0EL02332M	CE	3300 UF 16V
⚠C524	BZ110135	E02L02222M	CE	2200 UF 16V
⚠C529	BZ110133	CB3930MQ2K	CC	470 PF 250V
C535	BZ110202	C0PLRR713K	CC	0.001 UF 2KV R
⚠C539	BZ110227	CD39E0ML3M	CC	0.0033UF 250V
C541	AD301637	C03L0R7G3K	CC	0.0018UF 2KV R
C801	BZ110201	C0PLRR7H3K	CC	0.0022 UF 2KV R
			DIODES	
D401	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
⚠D402	AD300731	D2WXN49370	DIODE,SILICON	1N4937
D403	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D404	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D405	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D407	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
⚠D409	BZ410017	D94TA11B13	DIODE,ZENER	HZ11B3L TD
D410	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D411	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
⚠D412	AD300731	D2WXN49370	DIODE,SILICON	1N4937
⚠D413	AD300731	D2WXN49370	DIODE,SILICON	1N4937
⚠D501	BZ410061	D97U01001B	DIODE,ZENER	MTZJ10B T-77
D502	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D503	BZ410058	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D504	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D505	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
⚠D507	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D508	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D510	BZ410080	D2WXRU2AM0	DIODE,SILICON	RU2AM-EIC
⚠D512	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D513	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D514	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D515	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			DIODES	
⚠D517	AD300731	D2WXN49370	DIODE,SILICON	1N4937
⚠D518	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠D519	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
⚠D520	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠D521	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D528	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
⚠D530	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D533	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D534	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
⚠D535	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D536	AD300731	D2WXN49370	DIODE SILICON	1N4937
D537	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D601	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D602	BZ410058	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D603	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D605	BZ410059	D2WT11ES10	DIODE,SILICON	11ES1-EIC
D608	BZ410077	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC
D609	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D610	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D611	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D801	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1001	AD301638	0010E00330	INFRARED LED	LTE-3271T-012A-O
D1002	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1004	BZ410054	0021721150	LED	SLR-342VCT32
D1013	BZ410054	0021721150	LED	SLR-342VCT32
D1014	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D2201	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D4001	BZ410034	D97U01301B	DIODE,ZENER	MTZJ13B T-77
D4002	BZ410034	D97U01301B	DIODE,ZENER	MTZJ13B T-77
			ICS	
⚠IC351	BZ611001	I01DP75110	IC	AN7511
⚠IC401	BZ611053	I01TD55220	IC	AN5522
⚠IC501	BZ611054	I1KA98R050	IC	KIA78R05PI
⚠IC502	BZ410055	0002500450	PHOTO COUPLER	TLP621(GR)
IC601	AD301639	I06FC61250	IC	M61250FP
IC1001	AD301640	I56F57083A	IC	OEC7083A
⚠IC1003	AD301641	I9UF032310	IC	PST3231NR
IC1099	AE001384	A5E219A015	IC	S-24C04BDP-LA
IC4001	AD301643	I03F3206M0	IC	LA71206M-MPB
			TRANSISTORS	
Q403	BZ510068	TNAAJ05003	COMPOUND TRANSISTOR	KRC111SRTK
Q404	AD300610	TPAAD05003	COMPOUND TRANSISTOR	KRA104SRTK
⚠Q405	BZ510089	TC5T01627Y	TRANSISTOR,SILICON	2SC1627_Y(TPE2)
⚠Q406	BZ510120	TD3U021400	TRANSISTOR,SILICON	TT2140LS-CBC
⚠Q503	BZ510004	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
Q505	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q508	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
⚠Q510	BZ510093	TJXG5NC500	FET	STP5NC50FP
⚠Q511	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q601	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q602	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q603	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q604	BZ510074	TDAT00863Y	TRANSISTOR,SILICON	KTD863_Y-AT
Q605	BZ510074	TDAT00863Y	TRANSISTOR,SILICON	KTD863_Y-AT
Q606	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q607	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q609	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q611	BZ510090	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
Q612	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
⚠Q804	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q805	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q806	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q1003	BZ410106	0002700680	PHOTO COUPLER	RPI-352C40N
Q1004	BZ510067	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
⚠Q1005	BZ410107	0002700690	PHOTO COUPLER	RPI-303
Q1007	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q1009	BZ410106	0002700680	PHOTO COUPLER	RPI-352C40N
Q1011	BZ410097	0000M00390	PHOTO TRANSISTOR	ST-304L

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			TRANSISTORS	
Q1013	BZ410097	0000M00390	PHOTO TRANSISTOR	ST-304L
Q1014	BZ510067	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q4001	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q4002	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q4003	BZ510072	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q4005	BZ510073	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q4006	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q4007	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4009	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q4010	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q4011	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4012	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4202	BZ510071	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
			COILS &TRANSFORMERS	
L401	AD301644	021L75472J	COIL	4.7 MH
⚠L502	BZ310075	029X000087	COIL,LINE FILTER	SS24V-10100
⚠L503	BZ310076	028R140031	COIL,DEGAUSS	8R140031
L601	BZ310012	021LA6R56M	COIL	0.56 UH
L603	BZ310040	02167F470J	COIL	47 UH
L607	BZ310038	021LA6120K	COIL	12 UH
L609	BZ310041	02167F101J	COIL	100 UH
L616	BZ310169	021LA6R39M	COIL	0.39 UH
L801	AD301757	021673271K	COIL	270 UH
L1001	BZ310009	021LA62R2K	COIL	2.2 UH
L4001	BZ310039	02167F220J	COIL	22 UH
L4003	BZ310041	02167F101J	COIL	100 UH
L4005	BZ310040	02167F470J	COIL	47 UH
L4006	BZ310040	02167F470J	COIL	47 UH
L4009	BZ310041	02167F101J	COIL	100 UH
T401	BZ310157	045009003J	TRANS,HORIZONTAL DRIVE	ETH09K14BZ
⚠T501	BZ310160	0481290804	TRANSFORMER,SWITCHING	81290804
T4001	BZ310114	031626009R	COIL,BIAS OSC	1626009
			JACKS	
⚠J351	BZ614361	060J131015	HEADPHONE JACK	MSJ-2000
⚠J801	AD301147	066F120018	SOCKET,CATHODE RAY TUBE	ISMS01S
J4201	AD300680	060Q401077	RCA JACK	AV1-09D-3
J4202	AD300681	060Q401076	RCA JACK	AV1-09D-4
			SWITCHES	
SW1001	BZ612016	0508S11001	SWITCH (LEAF)	LSA-1144EAU
SW2201	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2202	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2203	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2204	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2205	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2206	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2207	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2208	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2209	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2210	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
			VARIABLE RESISTORS	
VR401	BZ210218	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR502	BZ210024	V1163L2BTC	VOLUME,SEMI FIXED	EVNCYAA03BY2
			P.C.BOARD ASSEMBLIES	
PCB010	AE001383	A5E219A010	PCB ASS'Y	VMB281A
PCB110	AD301646	A5E201R110	PCB ASS'Y	TCB413A
			MISCELLANEOUS	
B501	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B503	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B505	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B602	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
BL001	BZ310014	023C00022A	COIL,BALUN	HPN-01
BT101	AE000012	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
BT102	AE000012	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
CD353	BZ614150	06CH12444A	CORD,CONNECTOR	CH12444A
⚠CD501	BZ614259	120R414906	CORD,AC BUSH	0R414906
CD503	BZ614133	069X620040	CONNECTOR	JM-2BK-61
CD801	BZ614175	06CU82039A	CORD,CONNECTOR	SM1098-009-1A
CD803	BZ614317	06CH012101	CORD,CONNECTOR	CH012101
CD851	AD300889	WHL6032038	FLAT CABLE	AWM2468 AWG26 10C BLACK 320MM
CD852	BZ614100	06CH01408A	CORD,EIS CONNECTOR	CH01408A
CD853	BZ614317	06CH012101	CORD CONNECTOR	CH012101

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description	
			MISCELLANEOUS		
CF601	BZ613031	1029045R7G	FILTER,SAW	TSF5229P3	
CF602	AD300513	1012T04702	FILTER,CERAMIC TRAP	MKT47.3MC110P-TF	
CF603	AD301647	1012T4R520	FILTER,CERAMIC	SFSRA4M50CF00-A0	
CF604	AD301648	1012T4R519	FILTER,CERAMIC TRAP	TPSRA4M50C00-A0	
CP351	AD301329	069E260659	CONNECTOR PCB SIDE	00_8283_0611_00_000	
CP352	BZ614365	069S120419	CONNECTOR PCB SIDE	A2502WV2-2P	
CP401	BZ614303	069S450089	CONNECTOR PCB SIDE	A1561WV2-A5P	
⚠CP502	AD300687	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P	
CP503	BZ614137	069X620030	CONNECTOR PCB SIDE	RE-H022TD-1130	
CP504	BZ614016	069W01001A	CONNECTOR PCB SIDE	003P-2100	
CP505	BZ614016	069W01001A	CONNECTOR PCB SIDE	003P-2100	
CP801	BZ614269	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P	
CD4001	BZ614373	122F061502	CORD,JUMPER	2F061502	
CP1001	BZ614289	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2	
CP1003	BZ614138	0694240139	CONNECTOR PCB SIDE	173979-4	
CP4001	BZ614054	0697240600	CONNECTOR PCB SIDE	TOC-C04X-B1	
CP4002	BZ614050	069J760029	CONNECTOR PCB SIDE	IMSA-9604S-06Z14	
CP4003	AD301649	067U002019	WIRE HOLDER	B2013H02-2P	
CP851A	BZ614273	067U010049	WIRE HOLDER	B2013H02-10P	
CP851B	BZ614273	067U010049	WIRE HOLDER	B2013H02-10P	
CUS013	BZ710149	800WFAA008	CUSHION C		
EL001	BZ614043	124116281A	EYE LET	XRY16X28BD	
EL002	BZ614044	124120301A	EYE LET	XRY20X30BD	
⚠F501	BZ614504	081PC05005	FUSE	51MS050L	
⚠FB401	AD301650	043214037F	TRANSFORMER,FLYBACK	FNI-14B001	
FH501	BZ614005	06710T0006	HOLDER,FUSE	EYF-52BC	
FH502	BZ614005	06710T0006	HOLDER,FUSE	EYF-52BC	
OS2201	BZ614199	077Q004017	REMOTE RECEIVER	PIC-37243SR	
⚠SP351	BZ614200	070C533019	SPEAKER	SG04D11BNA	
⚠TH501	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT	ZPB45BL3R0A	
TM101	AE001382	076D0GC020	TRANSMITTER	TOT201N06210	
⚠TU601	AD301652	0145K00062	TUNER,VHF-UHF	TECC1040PG38W	
⚠V801	BZ614141	098Q1404B2	CRT W/DY	A34AGT13X98(L)	
X602	AD301653	100DT3R531	CRYSTAL	HC-49/U	or
	AD302003	100CT3R505	CRYSTAL	HC-49/C	
X1001	AE000107	100CT01207	CRYSTAL	HC-49/U-S	
X1002	BZ613006	100DA32R01	CRYSTAL	DT-26	
X4001	BZ613017	100CT3R502	CRYSTAL	HC-49/U	

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN